SURGE PROTECTION SOLUTIONS

SURGE-TRAP® IEC TYPE 1, 1+2, 2, 2+3 LIGHTNING AND SURGE PROTECTION

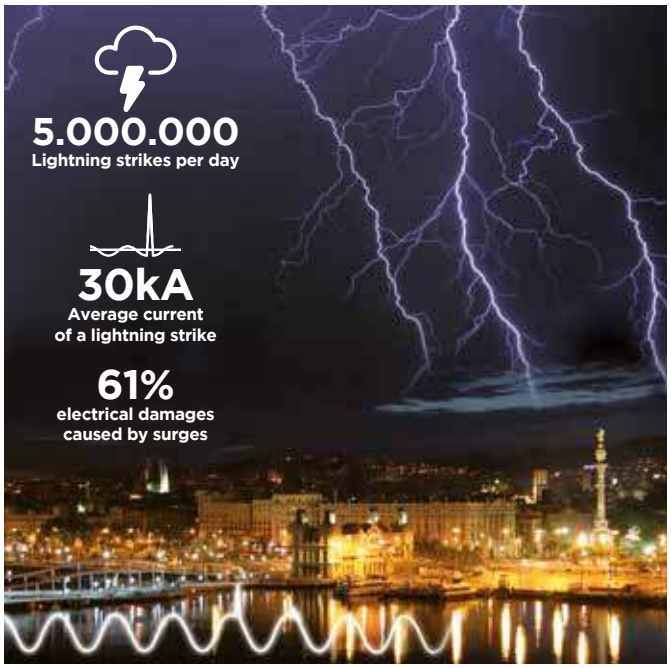
RISK OF ELECTRICAL SURGES

Lightning and surge protection

Electrical and electronic equipment is indispensable in the daily activities of today's businesses and individuals. Such devices are connected to the electricity grid, often exchanging data and signals through communication lines and are usually sensitive to disturbances. These interconnecting **networks provide a propagation path for overvoltages.**

Protection against lightning and overvoltages not only ensures the **safety of people, goods and equipment,** but also ensures **continuity of installation services** and meet criteria of **energy efficiency.**

Overvoltage protection **extends the life of the equipment by more than 20%,** which significantly **reduces the volume of electronic waste.** It also reduces the power consumption of the installations, all of which **translates into cost savings** and environmental sustainability.



Transient voltage surges in LV power lines

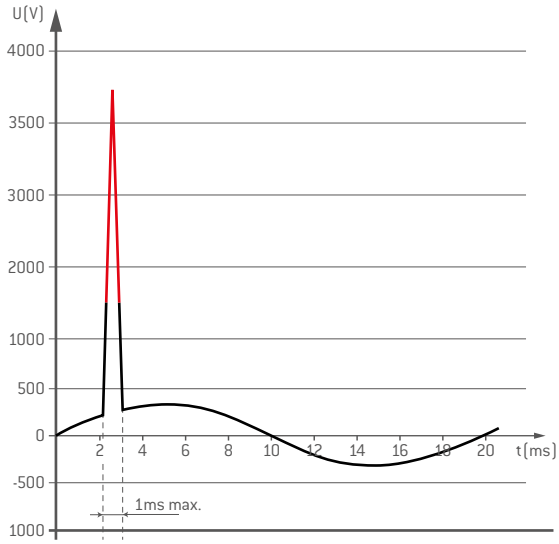
Transient overvoltages are voltage surges that can **reach tens of kilovolts** with a duration of the order of **microseconds.**

Despite their short duration, the high energy content can cause serious problems to equipment connected to the line, from **premature aging to destruction, causing disruptions to service and financial loss.**

This type of surge can have various different causes, including **atmospheric lightning** directly striking the external protection (lightning rods) on a building or transmission line or the associated **induction of electromagnetic fields on metallic conductors.** Outdoor and longer lines are the most exposed to these fields, which often receive high levels of induction.

It is also common for **non-weather phenomena,** such as **transformer centre switching** or the **disconnection of motors or other inductive loads** to cause voltage spikes in adjacent lines.

The protector will **discharge excess energy to earth,** thus limiting the peak voltage to a value acceptable for the electrical equipment connected.

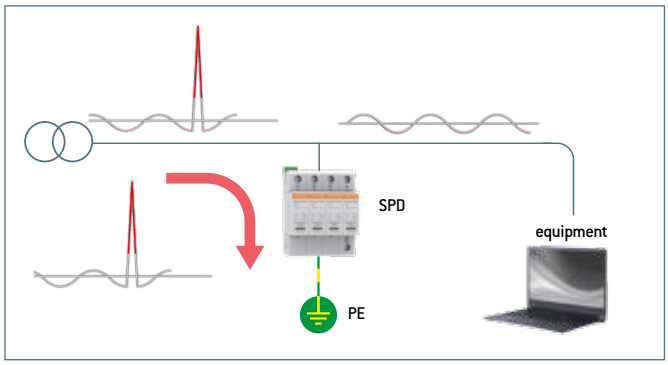


When the peak voltage reaches a value higher than the equipment can withstand, it causes its destruction.

The importance of the ground connection

A ground in proper conditions is therefore an aspect not to overlook when it comes to effective surge protection. Continuously monitoring the state of the ground connection ensures proper operation of surge protection devices. See page 27.

Operating principle of an SPD



Expertise in power quality

Your global electrical power partner

Mersen is a leading market player with innovative solutions in the field of lightning and surge protection.

We design, manufacture, test and certify our products and your systems.

Safety & reliability for surge protection

- **Bringing together the experience** of the principal international **manufacturing and test standards** for SPDs (IEC and UL)
- **Unique expertise in the combination of SPD and fuse technology,** one of the hot topics in the SPD industry
- **Innovative ranges combining surge protection and ground monitoring** to provide full safety and continuity of service
- **World-class surge test platform,** with laboratories holding accreditations for both IEC/EN 61643-11 (Terrassa) and UL 1449 3rd ed (Newburyport)
- **Global manufacturing footprint** of a comprehensive range of solutions covering both IEC and UL markets
- **Leadership in POP (TOV)** (Power-frequency Overvoltage Protection) and combined **SPD+POP** devices. EN 50550.
- Wide range of solutions targeting **industrial, commercial and residential applications**

Lightning and surge protection

Mersen offers a wide range of solutions along with advice and consulting services as well as after sale service

SPD – Surge-Trap®
Surge protective devices to IEC and NEMA/UL.
Also for telecom and signalling networks.
See page 12-29

GND – Grounding system monitors.
See page 31

REC – Smart automatic reclosers.
Fully programmable. POP (TOV) + RCD + MCB
See page 30

POP (TOV) – Power-frequency Overvoltage Protection.
EN 50550. (Temporary Overvoltages TOV)
See page 30

ESE – Electronic Early Streamer Emission lightning air terminals.

IMD – Insulation Monitoring Devices.
Electric vehicle, photovoltaic and IT power supplies.

World-class surge test platform

Mersen is committed to **innovation.** The proof of that quest for continual improvement: a total of more than a million tests in 25 years!

In the field of lightning and surge protection Mersen has a highly specialized team, test laboratories, high investment in R&D&i, international patents and presence on standards committees.

Mersen has two surge test labs: one in Newburyport, Massachusetts, and one state of the art Lightning and Surge protection test lab in Terrassa, Spain, namely the Global Center of Excellence for IEC Surge Protection. The two are complementary, in terms of the available resources, to be able to offer the **widest possible range of tests to IEC, UL and NFC standards.**

Mersen welcomes customers at both locations to run test campaigns focused on critical points in their own bills of requirements

Protection parameters according to IEC 61643-11

Iimp
Impulse current
Peak current with **10/350µs** waveform which the protection device can withstand without reaching end of life.

Imax
Maximum discharge current
Peak current with **8/20µs** waveform which the protection device can withstand without reaching end of life.

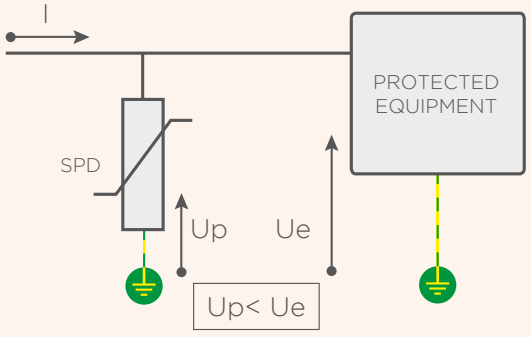
In
Nominal current
Peak current in **8/20µs** waveform the protection device can withstand 20 times without reaching end of life.

Up
Voltage protection level
Maximum residual voltage between the terminals of the protection device during the application of a peak current equal to the nominal current (In).

Uc
Maximum continuous operating voltage
Maximum effective voltage that can be applied permanently to the terminals of the protection device.

Uoc
Open circuit voltage (combined voltage pulse)
This parameter is used only for the Class III test and is applicable to a Type 3 SPD. It consists of the injection of a combination wave (**1.2/50µs** in open circuit - **8/20µs** in short circuit).

Ifi
Follow current extinction capability
This parameter is only devoted to surge protectors using “air gap” technology. Once they have “switched”, these surge protectors conduct part of the network current (follow current) and need to interrupt it.



I: peak current
Up: voltage protection level. Residual voltage at In.
Ue: impulse voltage the equipment can withstand

When selecting an SPD, several points must be considered:

- **Network topology:** TNS, TNC, TT, IT, PV and No of conductors.
- **Nominal voltage rating (Un)** of the supply.

Both features will condition the **maximum continuous operating voltage (Uc)** as the IEC standard 60364-5-534 sets the minimum allowed value of Uc depending on the system configuration, taking into account a safety margin of the device above the nominal voltage.

- **Voltage withstand rating (Ue)** of the equipment in the installation.The protection device should be selected so that the **voltage protection level (Up)** is compatible with (lower than) the value of Ue. IEC standard 60364-4-443 classifies equipment into four categories, based on the impulse voltage they are capable of withstanding. (See page 5, figure)
- **Exposure of the installation** to atmospheric and non-weather phenomena.

Exposure ratings

The actual exposure of an installation depends on the combination of 3 basic criteria: (1) **electrical service system,** (2) **external (and internal) switching of loads** and (3) **lightning strike density** (isokeraunic level).

Factors (1) and (2) generate three possible situations:

Direct impact exposure of an installation fitted with external lightning protection system or close to a tower or element susceptible to receive a strike.

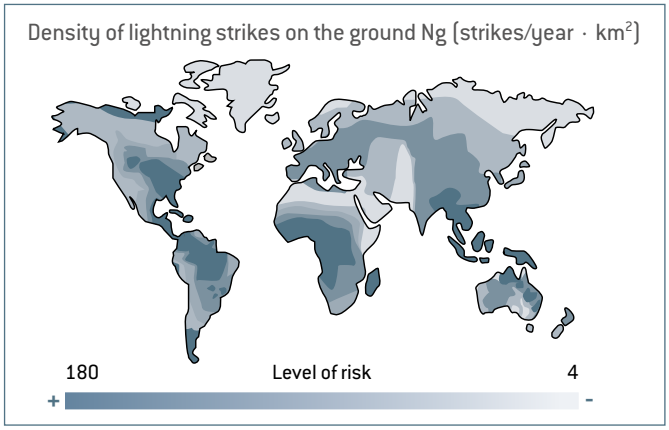
High exposure of an installation fed by long overhead service lines or situated in large industrial or commercial premisses.

Medium exposure of installations with an underground service and not subject to switchings of industrial loads in the vicinity.

Factor (3), the **isokeraunic level** of a certain country.

See page 8 for a basic recommendation guide.

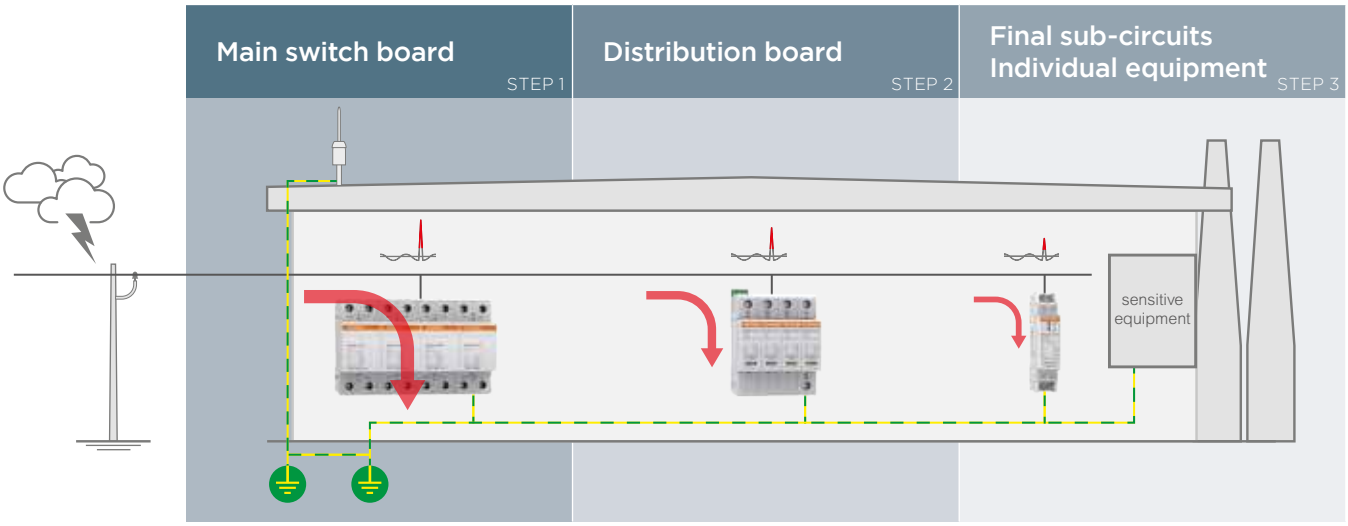
Isokeraunic map



Protection system of coordinated stages: Type 1, 2 and 3 SPDs

The SPDs of a surge protection system must be able to withstand the discharged current and provide a Ures level (residual voltage) lower than the Ue peak voltage that the equipment can withstand.
Most of the times it is not possible to achieve this with just one SPD, especially because the intensity of the surge is not known, and because of the induction of overvoltages when conductors exceed 10m.

The optimal system of protection is the **3-STEP approach, in which successive stages are combined in the performance of high discharge capacity devices and devices with an optimal voltage protection level (low).** This is addressed by the definition of "Types" or "Classes" of SPDs according to the type of transient pulses to which each protected zone in the installation is subject to.



Overvoltage category IEC 60364-4-443	IV	III	II	I
Overvoltage withstand (Ue) values for equipment at 230/400V	6kV	4kV	2,5kV	1,5kV

IEC/EN 61643-11	Type 1 / Class I	Type 2 / Class II	Type 3 / Class III
Definition	Designed for use in incoming power supply panels where the risk of lightning strike is high, in particular in buildings with an external lightning protection system. Must be accompanied by downstream Class II protectors.	Designed for use in distribution panels located downstream of class I protectors or in incoming power supply panels in areas with low exposure to lightning strikes, where the building is not fitted with an external LPS.	Always installed downstream of a Class II protection designed to protect sensitive equipment or equipment located more than 20m downstream of the Class II SPD.
LPZ IEC 62305-4 protection zone	LPZ 1	LPZ 2	LPZ 3
Class test to IEC/EN 61643-11	10/350µs waveform, Class I test.	8/20µs waveform, Class II test.	Combined 1.2/50µs-8/20µs waveform Class III test.
Surge	Direct impact of a lightning strike (current).	Indirect impact of a ligthning strike on the distribution line (overhead lines) or its vicinity (rise of ground potential or induction by coupling of electromagnetic radiation of the strike) or in the event of a switching.	Indirect impact simulated by the current and voltage that can reach the long-distance circuits and individual equipment to be protected.
Discharge capacity (Iimp, Imax)	High	Medium	Low
Voltage protection level (Up)	√ (Coarse)	√√ (Fine)	√√√ (Very fine)
Mersen Surge-Trap® series	STM T1		
	STP T12		
		STP T2; STP T2 PV	
		STP T23; STM T23 S; STL T23; STE T23	

SURGE-TRAP® RANGE OVERVIEW

NEW LINE

FIRST STEP OF PROTECTION 50kA

STM T1

See page 12

COMBINED TYPE 1+2

STP T12

See page 13

WIDE RANGE

STP T2

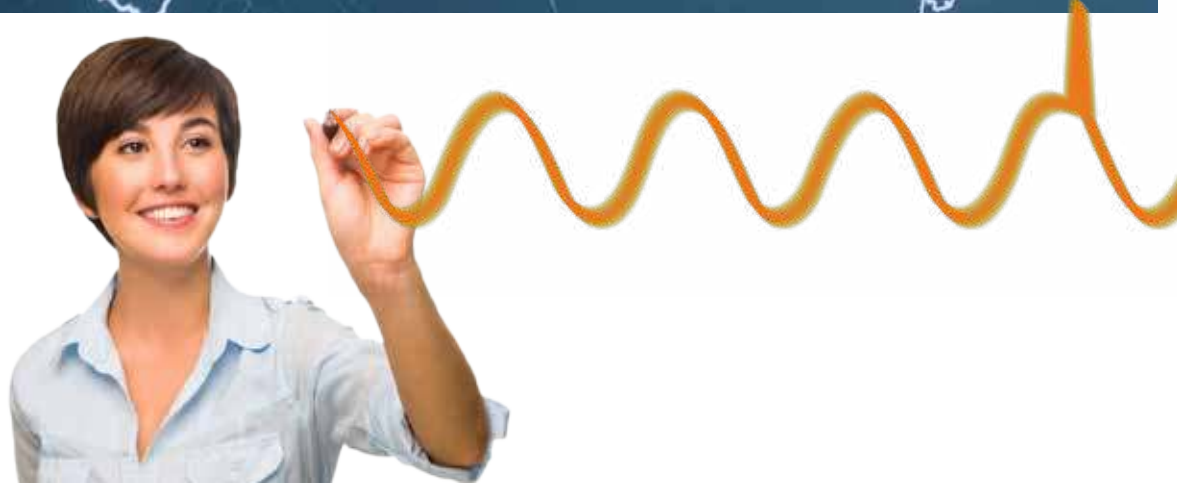
See page 18

PV EN 50539-11
UL 1449

STP T2 PV

See page 21

Location	First step of protection		First step of protection		Second step of protection		For DC photovoltaic applications	
SPD Type	Type 1 lightning current arrester to IEC/EN 61643-11		Type 1+2 SPD to IEC/EN 61643-11		Type 2 SPD to IEC/EN 61643-11 Type 2 SPD to UL 1449 4rd Ed.		Type 2 DC to EN 50539-11 UL 1449 3rd Ed. recognised	
Iimp (10/350µs)	50kA (phase) / 100kA (N-PE)		12.5kA / 25kA					
Imax (8/20µs)			50kA / 100kA		40kA		40kA	
In (8/20µs)	50kA (phase) / 100kA (N-PE)		20kA / 25kA		20kA		20kA	
Uoc (1.2/50µs)								
Special features	Ifi = 50kA follow current interrupt rating. Multi-sparkgap technology. Leakage current free.		ELV: Extra Low Voltage models available. Reversible & coded cartridges.		ELV: Extra Low Voltage models available. Reversible & coded cartridges.		Iscpv = 10kA (no back-up fuse needed). SCCR 100kA and 50kA. Reversible & coded cartridges.	
Supply voltage Un (L-N/L-L)	120/208V, 230/400V, 277/480V		60V 120/208V, 230/400V, 277/480V 400/690V		48V, 60V 120/208V, 230/400V, 277/480V 400/690V + above		65Vdc, 80Vdc 660Vdc, 1060Vdc 1200Vdc, 1500Vdc	
Network configuration	TNS, TNC, TT	Single phase Split phase 3-phase WYE; Delta	TNS, TNC, TT, IT	Single phase Split phase 3-phase WYE; Delta	TNS, TNC, TT, IT	Single phase Split phase 3-phase WYE; Delta	PV (DC side)	
Format	DIN-rail mountable. Monobloc format		DIN-rail mountable. Pluggable format		DIN-rail mountable. Pluggable format		DIN-rail mountable. Pluggable format	
Type according to EN 61643-11	TYPE 1		TYPE 1+2		TYPE 2			



FINE PROTECTION

STP T23

See page 22

SLIM: SPACE SAVING

STM T23 SLIM

See page 25

POWERFUL EMI FILTER

STE T23 EMI

See page 26

LED STREET-LIGHT 10kV

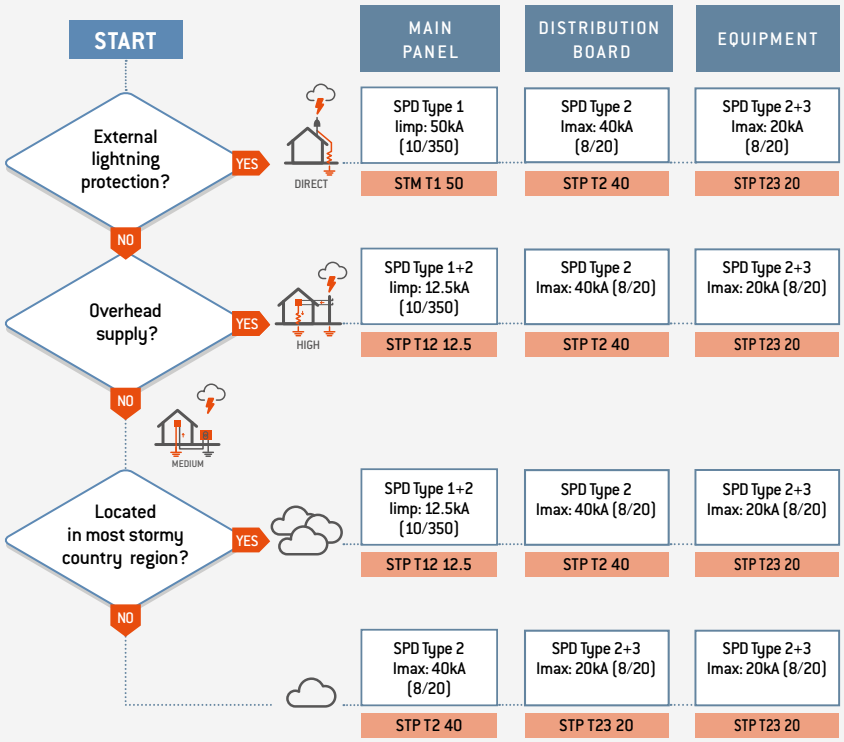
STL/STLB T23 LED

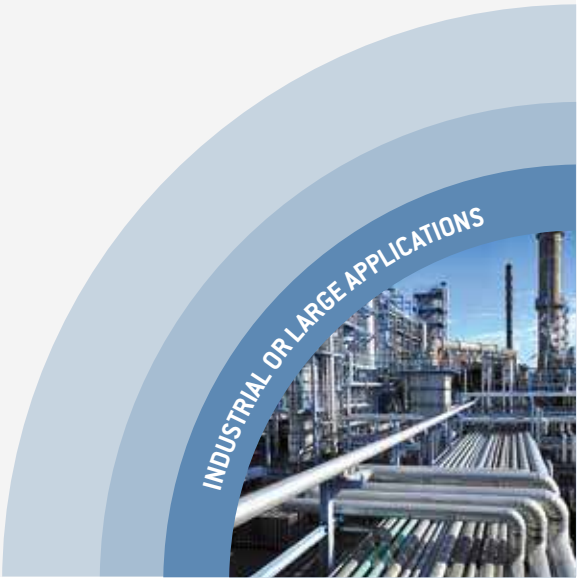
See page 27

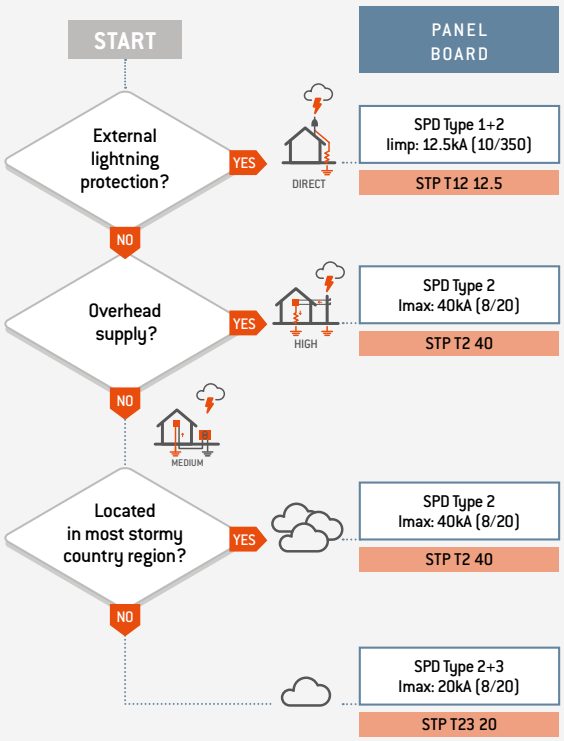
Final stage of protection (very fine)		Final stage of protection (very fine)	Final stage of protection (very fine)	For installation in the pole or OEM in the luminary of outdoor LED lighting systems
Type 2+3 SPD to IEC/EN 61643-11		Type 2+3 SPD to IEC/EN 61643 -11	Type 2+3 SPD to IEC/EN 61643 -11	Type 2+3 SPD to IEC/EN 61643-11, with CB scheme. Luminary "surge tested" and certified (optional)
20kA		20kA / 6kA	20kA	10kA
10kA		10kA / 3kA	10kA	5kA
10kV		10kV / 6kV	6kV	10kV
PLC: Power Line Communication friendly solutions (LCF). Reversible & coded cartridge.		Ideal for limited spaces (1 module).	Filter attenuation up to 82dB (common mode) vs electromagnetic disturbances. Rated current load up to 20A.	Class 1 and Class 2 luminaires. Miniature size and easy to install.
120/208V, 230/400V, 277/480V 400/690V		12V, 24V, 48V, 60V, 120V, 230V Also for use in DC voltage applications	120V, 230V	230V (Contact us for other voltages)
TNS, TNC, IT, TT	Single phase Split phase 3-phase WYE; Delta	Single Phase TT, TNS	Single Phase TT, TNS	Solutions for all types of electrical grids (configurations and voltages)
DIN-rail mountable. Pluggable format		DIN-rail mountable. Monobloc format	DIN-rail mountable. Monobloc format	Hardwired
TYPE 2+3				

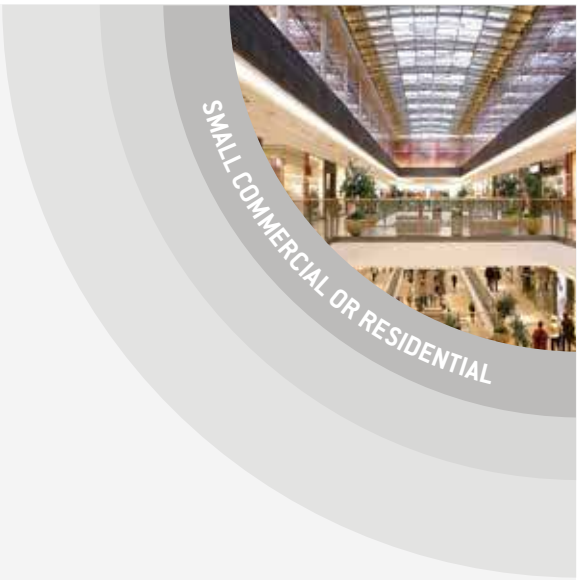
Approvals / Standards

BASIC GUIDE TO SELECTION OF SPDS

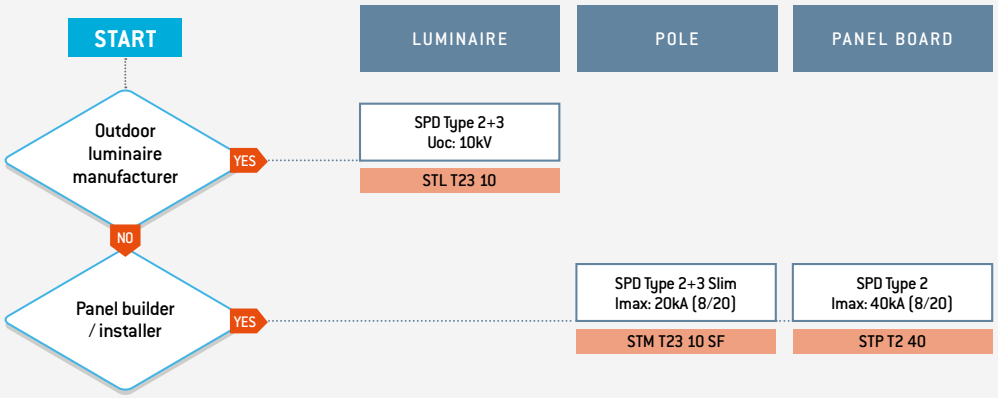


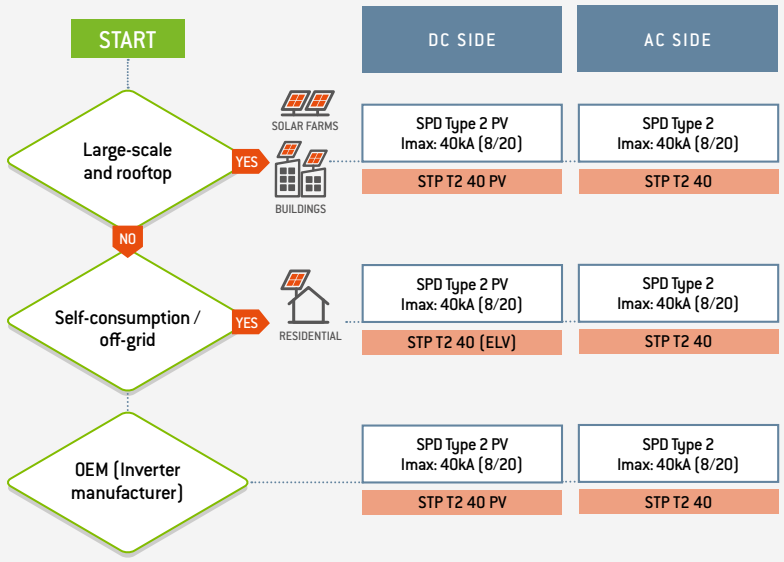


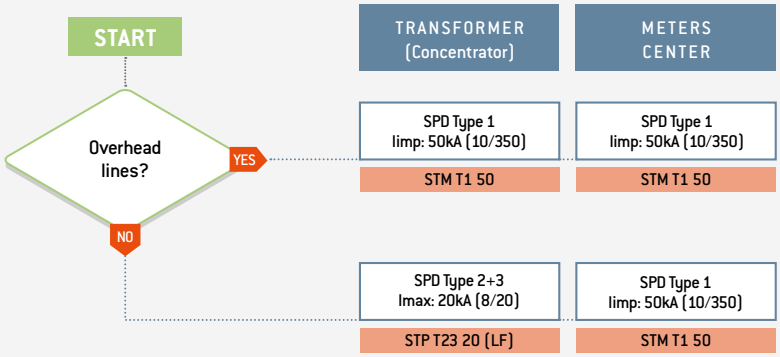





OUTDOOR LED LIGHTING
PHOTOVOLTAIC
SMART GRID-METERING


START
LUMINAIRE
POLE
PANEL BOARD
Outdoor luminaire manufacturer
YES
SPD Type 2+3
Uoc: 10kV
STL T23 10
NO
Panel builder / installer
YES
SPD Type 2+3 Slim
Imax: 20kA (8/20)
STM T23 10 SF
SPD Type 2
Imax: 40kA (8/20)
STP T2 40


START
DC SIDE
AC SIDE
Large-scale and rooftop
YES
SOLAR FARMS
BUILDINGS
SPD Type 2 PV
Imax: 40kA (8/20)
STP T2 40 PV
SPD Type 2
Imax: 40kA (8/20)
STP T2 40
NO
Self-consumption / off-grid
YES
RESIDENTIAL
SPD Type 2 PV
Imax: 40kA (8/20)
STP T2 40 (ELV)
SPD Type 2
Imax: 40kA (8/20)
STP T2 40
OEM (Inverter manufacturer)
SPD Type 2 PV
Imax: 40kA (8/20)
STP T2 40 PV
SPD Type 2
Imax: 40kA (8/20)
STP T2 40

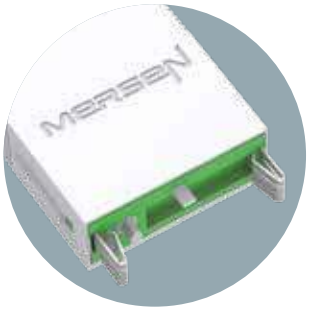

START
TRANSFORMER (Concentrator)
METERS CENTER
Overhead lines?
YES
SPD Type 1
Iimp: 50kA (10/350)
STM T1 50
SPD Type 1
Iimp: 50kA (10/350)
STM T1 50
NO
SPD Type 2+3
Imax: 20kA (8/20)
STP T23 20 (LF)
SPD Type 1
Iimp: 50kA (10/350)
STM T1 50


MERSEN SOLUTION
SPD LOCATION

SURGE-TRAP® HIGHLIGHTS

STP Surge-Trap® Pluggable

See page 13-21



Remote indication

Dry contacts, optional in all ranges, for remote indication of protector end of life.

Biconnect connection

Two types of terminal: for rigid or flexible cable and for fork type comb busbar.

Mersen quality

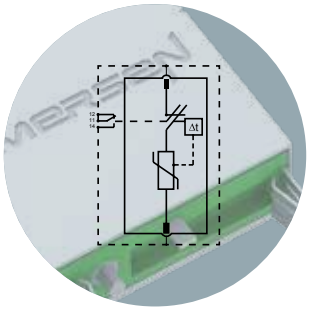
Product range produced entirely by Mersen, with a thermal disconnection system. Use of the best materials and components.

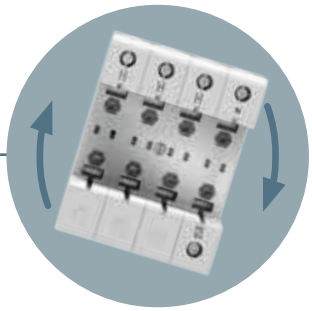
Protector lifetime status indication

Clear display of protection end of life.

Cartridge security system

Vibration proof insertion “click” effect.





New, optimised disconnection system

Mersen has developed an optimised disconnection system for end of life. Complies with the disconnection tests of the standards for protectors for photovoltaic applications.

Reversible installation

Reversible chassis to allow cable entry from above or below.

Mechanical cartridge coding

Safety system to avoid possible cartridge replacement errors.

STM T1

See page 12

Type 1 lightning current arrester

- Discharges impulse currents with a 10/350µs waveform: 50kA per phase.
- Leakage current free (LCF).

Multi Spark Gap

- Follow current quenching capacity. Ifi: 50kA.
- Low residual voltage.

STM T23 SLIM

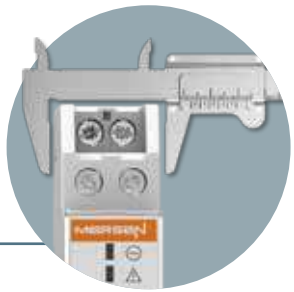
See page 25

Status indication

Remote and visual indication of life status of the protection device.

Type 2+3, 2 poles in 1 module

Compact combined device (Type 2+3) for fine protection. Ideal for limited spaces.

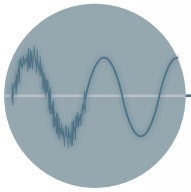


STE T23 EMI

See page 26

EMI / RFI Filter

All models include an electromagnetic filter for network noise.



Combined SPD (Type 2+3)

Combined devices for discharging induced transient overvoltages, while providing a very fine protection level for sensitive equipment.

STL / STLB T23 LED

See page 27-28

Solutions for LED lighting luminaires

The range of surge protectors for LED luminaires is suitable for all network configurations and all voltages (including IT systems).
Mersen has solutions for class I and class II luminaires.

Compact and easy to install in any luminaire

Mersen has designed a compact solution which fits any luminaire (OEM Solutions).

10kV protection

STM T1 50

STM T1 50 is the most robust series of single pole Type 1/Class I lightning current arresters, able to discharge energy (current) from a direct lightning strike (10/350µs) on an external lightning protection system (LPS) or overhead supplies, in accordance with IEC/EN 61643-11. Suitable as the first step of protection in incoming power supply panels and areas with high exposure to lightning strikes, fitted with an external lightning protection system.

Ratings and features

- Lightning impulse current (10/350µs): 50kA
- Follow current quenching capacity (Ifi): 50kA
- Leakage current free (LCF)
- Multi-discharge technology
- Single pole devices for TNS, TNC, IT and TT earthing systems
- Un(L-N/L-L): 120/208V, 230/400V, 277/480V, 400/690V
- DIN-rail mountable, monobloc format

Iimp
50kA

LEARN MORE
ep.mersen.com

Approvals/Standards

- IEC/EN 61643-11
- CE

IEC CE

GUIDE

Example
STM T1 - 50K 275V - 1P

Surge-Trap® Monobloc Type 1 / Class I lightning current arrester (10/350µs)

Step 1	
Lightning impulse current	
50K	Iimp (L-N) =50kA
100K	Iimp (N-PE) =100kA

Step 2	
Operating voltage	
Uc	Un (L-N/L-L)
150V	120/208V
275V	230/400V
320V	277/480V
440V	400/690V
Blank	N-PE protection

Step 3	
Network configuration	
1P	L-N; 1Ph (TNS,TNC,TT, IT)
N	N-PE; Neutral (TT Spark-Gap)

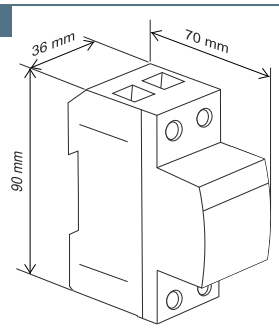
Catalog numbers / Reference numbers

1 pole

		Network						
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Iimp (10/350) [kA]	In (8/20) [kA]	Up@In(8/20) [kV]
83010103	STMT1-50K150V-1P	L-N (1Ph)	A	120	150	50	50	≤2
83010100	STMT1-50K275V-1P	L-N (1Ph)	A	230	275	50	50	≤2
83010104	STMT1-50K320V-1P	L-N (1Ph)	A	277	320	50	50	≤2
83010107	STMT1-50K440V-1P	L-N (1Ph)	A	400	440	50	50	≤2,5
83010102	STMT1-100K-N	N-PE (N)	B	Neutral	255	100	100	≤2

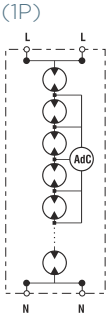
Dimensions

1 pole

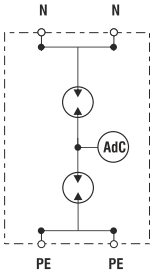


Electrical diagrams

A (1P)



B (N)



STP T12 12.5

STP T12 12.5 is the series of combined Type 1+2/Class I+II devices for discharging lightning currents and protecting against voltage surges, in accordance with IEC/EN 61643-11.

Suitable as the first step of protection in incoming power supply panels and areas with exposure to the atmosphere, where installations are usually provided with an external lightning protection system.

Ratings and features

- Lightning impulse current (10/350µs): 12.5kA per phase
- Maximum discharge current (8/20µs): 50kA per phase
- Nominal discharge current (8/20µs): 20kA per phase
- TNS, TNC, TT and IT networks
- Un(L-N/L-L): 60V, 120/208V, 230/400V, 277/480V and 400/690V
- DIN-rail mountable, plug-in format
- Visual and remote end of life indicators
- Reversible chassis to allow cable entry from above or below
- Mechanically coded cartridges to avoid cartridge replacement errors

limp
12.5kA

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Approvals/Standards

- IEC/EN 61643-11
- CE

IEC CE

GUIDE

Example

STP T12 - 12K 275V - 4PG M

Surge-Trap® Pluggable Type 1+2 / Class I+II combined lightning current arrester (10/350µs) and surge protective device (8/20µs)

Step 1	Lightning impulse current
12K	limp (L-N) =12.5kA
25K	limp (N-PE) =25kA
50K	limp (N-PE) =50kA

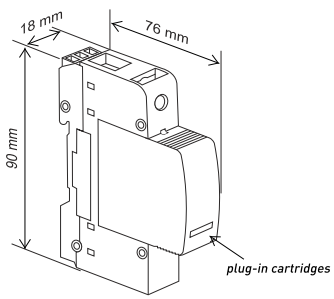
Step 2	Operating voltage
Uc	Un (L-N/L-L)
75V	60/-V
150V	120/208V
275V	230/400V
320V	277/480V
440V	230/400V "IT" 400/690V
Blank	N-PE protection

Step 3	Network configuration
1P	L-N; 1Ph (TNS, TNC, IT, TT)
N	N-PE; Neutral (TT Spark-Gap)
2P	2+0; 1Ph+N (TNS,IT)
2PG	1+1; 1Ph+N (TT)
3P	3+0; 3Ph (TNC,IT)
4P	4+0; 3Ph+N (TNS,IT)
4PG	3+1; 3Ph+N (TT)

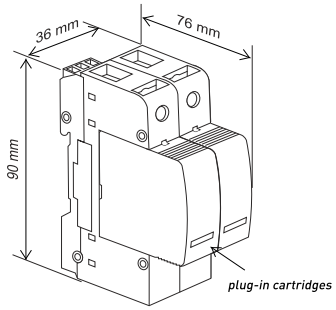
Step 4	Remote monitoring
M	Microswitch included

Dimensions

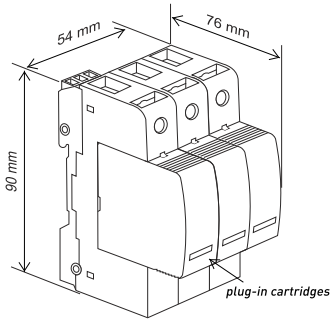
1 pole



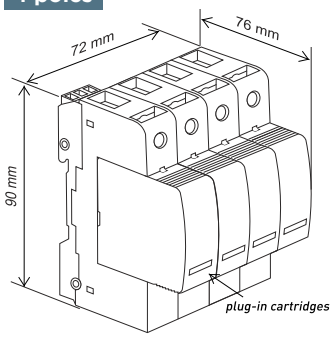
2 poles



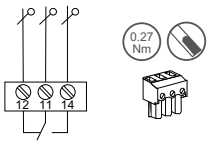
3 poles



4 poles



Microswitch diagram



U_{max} / I_{max}	max 1.5 mm²
AC: 250 V/1 A	
DC: 125 V/0.2 A	

Catalog numbers / Reference numbers

1 pole

		Network									Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Iimp (10/350) [kA]	Imax (8/20) [kA]	In (8/20) [kA]	Up@In (8/20) [kV]	REMOTE (M)	L	N
83120100	**STPT12-12K150V-1P**	L-N (1Ph)	A	120	150	12.5	50	20	≤1		C02	-
83120101	**STPT12-12K150V-1PM**	L-N (1Ph)	A	120	150	12.5	50	20	≤1	√	C02	-
83120102	**STPT12-12K275V-1P**	L-N (1Ph)	A	230	275	12.5	50	20	≤1.3		C03	-
83120103	**STPT12-12K275V-1PM**	L-N (1Ph)	A	230	275	12.5	50	20	≤1.3	√	C03	-
83120104	**STPT12-12K320V-1P**	L-N (1Ph)	A	277	320	12.5	50	20	≤1.4		C04	-
83120105	**STPT12-12K320V-1PM**	L-N (1Ph)	A	277	320	12.5	50	20	≤1.4	√	C04	-
83120106	**STPT12-12K440V-1P**	L-N (1Ph)	A	400	440	12.5	50	20	≤1.8		C05	-
83120107	**STPT12-12K440V-1PM**	L-N (1Ph)	A	400	440	12.5	50	20	≤1.8	√	C05	-
83120108	**STPT12-25K-N**	N-PE (N)	B	Neutral	255	25	50	25	≤1.5		-	C06
83120110	**STPT12-50K-N**	N-PE (N)	B	Neutral	255	50	50	50	≤1.5		-	C07

2 poles

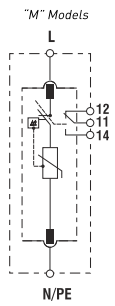
		Network									Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Iimp (10/350) [kA]	Imax (8/20) [kA]	In (8/20) [kA]	Up@In (8/20) [kV]	REMOTE (M)	L	N
83120126	**STPT12-12K75V-2P**	TNS (1Ph+N); PV	C	60/-	75; 80 Ucpv	12.5	50	20	≤0.65		C01	
83120127	**STPT12-12K75V-2PM**	TNS (1Ph+N); PV	C	60/-	75; 80 Ucpv	12.5	50	20	≤0.65	√	C01	
83120112	**STPT12-12K150V-2PG**	TT (1Ph+N)	D	120/-	150	12.5 (L-N) 25 (N-PE)	50	20	≤1 (L-N) ≤1.5 (N-PE)		C02	C06
83120113	**STPT12-12K150V-2PGM**	TT (1Ph+N)	D	120/-	150	12.5 (L-N) 25 (N-PE)	50	20	≤1 (L-N) ≤1.5 (N-PE)	√	C02	C06
83120114	**STPT12-12K275V-2PG**	TT (1Ph+N)	D	230/-	275	12.5 (L-N) 25 (N-PE)	50	20	≤1.3 (L-N) ≤1.5 (N-PE)		C03	C06
83120115	**STPT12-12K275V-2PGM**	TT (1Ph+N)	D	230/-	275	12.5 (L-N) 25 (N-PE)	50	20	≤1.3 (L-N) ≤1.5 (N-PE)	√	C03	C06
83120116	**STPT12-12K320V-2PG**	TT (1Ph+N)	D	277/-	320	12.5 (L-N) 25 (N-PE)	50	20	≤1.4 (L-N) ≤1.5 (N-PE)		C04	C06
83120117	**STPT12-12K320V-2PGM**	TT (1Ph+N)	D	277/-	320	12.5 (L-N) 25 (N-PE)	50	20	≤1.4 (L-N) ≤1.5 (N-PE)	√	C04	C06
83120118	**STPT12-12K150V-2P**	TNS (1Ph+N)	F	120/-	150	12.5	50	20	≤1		C02	
83120119	**STPT12-12K150V-2PM**	TNS (1Ph+N)	F	120/-	150	12.5	50	20	≤1	√	C02	
83120120	**STPT12-12K275V-2P**	TNS (1Ph+N)	F	230/-	275	12.5	50	20	≤1.3		C03	
83120121	**STPT12-12K275V-2PM**	TNS (1Ph+N)	F	230/-	275	12.5	50	20	≤1.3	√	C03	
83120122	**STPT12-12K320V-2P**	TNS (1Ph+N)	F	277/-	320	12.5	50	20	≤1.4		C04	
83120123	**STPT12-12K320V-2PM**	TNS (1Ph+N)	F	277/-	320	12.5	50	20	≤1.4	√	C04	
83120124	**STPT12-12K440V-2P**	IT (1Ph+N); TNS(1Ph+N)	C	230/-; 400/-	440	12.5	50	20	≤1.8		C05	
83120125	**STPT12-12K440V-2PM**	IT (1Ph+N) TNS(1Ph+N)	C	230/-; 400/-	440	12.5	50	20	≤1.8	√	C05	

ELV

ELV *Extra Low Voltage, also for use in DC Photovoltaic self-consumption / off-grid applications.*

Electrical diagrams

A (1P)



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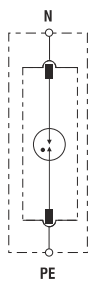
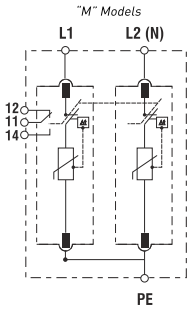
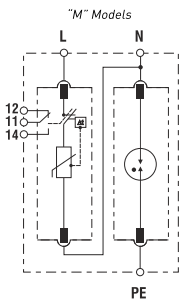


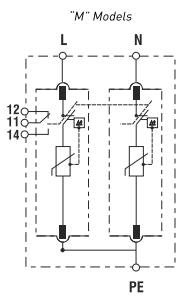
C 2+0 (2P)



D 1+1 (2PG)



F 2+0 (2P)



SURGE-TRAP® TYPE 1+2 SPDs | STP T12 12.5

3 poles

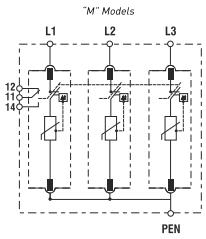
		Network									Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Iimp (10/350) [kA]	Imax (8/20) [kA]	In (8/20) [kA]	Up@In (8/20) [kV]	REMOTE (M)	L	N
83120128	**STPT12-12K150V-3P**	TNC (3Ph)	H	-/208	150	12.5	50	20	≤1		C02	-
83120129	**STPT12-12K150V-3PM**	TNC (3Ph)	H	-/208	150	12.5	50	20	≤1	√	C02	-
83120130	**STPT12-12K275V-3P**	TNC (3Ph)	H	-/400	275	12.5	50	20	≤1.3		C03	-
83120131	**STPT12-12K275V-3PM**	TNC (3Ph)	H	-/400	275	12.5	50	20	≤1.3	√	C03	-
83120132	**STPT12-12K320V-3P**	TNC (3Ph)	H	-/480	320	12.5	50	20	≤1.4		C04	-
83120133	**STPT12-12K320V-3PM**	TNC (3Ph)	H	-/480	320	12.5	50	20	≤1.4	√	C04	-
83120134	**STPT12-12K440V-3P**	IT (3Ph); TNC (3Ph)	I; H	-/400; -/690	440	12.5	50	20	≤1.8		C05	-
83120135	**STPT12-12K440V-3PM**	IT (3Ph); TNC (3Ph)	I; H	-/400; -/690	440	12.5	50	20	≤1.8	√	C05	-

4 poles

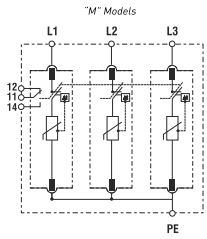
		Network									Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Iimp (10/350) [kA]	Imax (8/20) [kA]	In (8/20) [kA]	Up@In (8/20) [kV]	REMOTE (M)	L	N
83120136	**STPT12-12K150V-4PG**	TT (3Ph+N)	J	120/208	150	12.5 (L-N) 50 (N-PE)	50	20	≤1 (L-N) ≤1.5 (N-PE)		C02	C07
83120137	**STPT12-12K150V-4PGM**	TT (3Ph+N)	J	120/208	150	12.5 (L-N) 50 (N-PE)	50	20	≤1 (L-N) ≤1.5 (N-PE)	√	C02	C07
83120138	**STPT12-12K275V-4PG**	TT (3Ph+N)	J	230/400	275	12.5 (L-N) 50 (N-PE)	50	20	≤1.3 (L-N) ≤1.5 (N-PE)		C03	C07
83120139	**STPT12-12K275V-4PGM**	TT (3Ph+N)	J	230/400	275	12.5 (L-N) 50 (N-PE)	50	20	≤1.3 (L-N) ≤1.5 (N-PE)	√	C03	C07
83120140	**STPT12-12K320V-4PG**	TT (3Ph+N)	J	277/480	320	12.5 (L-N) 50 (N-PE)	50	20	≤1.4 (L-N) ≤1.5 (N-PE)		C04	C07
83120141	**STPT12-12K320V-4PGM**	TT (3Ph+N)	J	277/480	320	12.5 (L-N) 50 (N-PE)	50	20	≤1.4 (L-N) ≤1.5 (N-PE)	√	C04	C07
83120142	**STPT12-12K150V-4P**	TNS (3Ph+N)	L	120/208	150	12.5	50	20	≤1		C02	
83120143	**STPT12-12K150V-4PM**	TNS (3Ph+N)	L	120/208	150	12.5	50	20	≤1	√	C02	
83120144	**STPT12-12K275V-4P**	TNS (3Ph+N)	L	230/400	275	12.5	50	20	≤1.3		C03	
83120145	**STPT12-12K275V-4PM**	TNS (3Ph+N)	L	230/400	275	12.5	50	20	≤1.3	√	C03	
83120146	**STPT12-12K320V-4P**	TNS (3Ph+N)	L	277/480	320	12.5	50	20	≤1.4		C04	
83120147	**STPT12-12K320V-4PM**	TNS (3Ph+N)	L	277/480	320	12.5	50	20	≤1.4	√	C04	
83120148	**STPT12-12K440V-4P**	IT (3Ph+N); TNS (3Ph+N)	L	230/400; 400/690	440	12.5	50	20	≤1.8		C05	
83120149	**STPT12-12K440V-4PM**	IT (3Ph+N); TNS (3Ph+N)	L	230/400; 400/690	440	12.5	50	20	≤1.8	√	C05	

Electrical diagrams

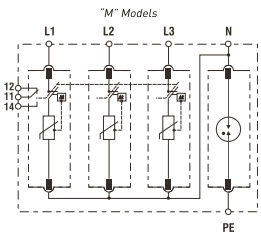
H 3+0 (3P)



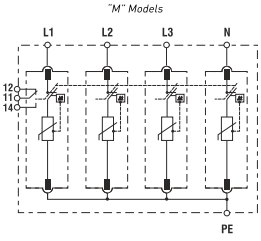
I 3+0 (3P)



J 3+1 (4PG)



L 4+0 (4P)



Replacement cartridges

REFERENCE NUMBER	CATALOG NUMBER	NETWORK	Un [Vac]	Uc [V]	Iimp (10/350) [kA]	Imax (8/20) [kA]	In (8/20) [kA]	Up@In (8/20) [kV]	CARTRIDGE ID.
83120000	**SP12-12K75V**	L-N (1Ph)	60	75	12.5	50	20	≤0.65	C01
83120001	**SP12-12K150V**	L-N (1Ph)	120	150	12.5	50	20	≤1	C02
83120002	**SP12-12K275V**	L-N (1Ph)	230	275	12.5	50	20	≤1.3	C03
83120003	**SP12-12K320V**	L-N (1Ph)	277	320	12.5	50	20	≤1.4	C04
83120004	**SP12-12K440V**	L-N (1Ph)	400	440	12.5	50	20	≤1.8	C05
83120005	**SP12-25K-N**	N-PE (N)	Neutral	255	25	50	25	≤1.5	C06
83120006	**SP12-50K-N**	N-PE (N)	Neutral	255	50	50	50	≤1.5	C07

STP T12 25

STP T12 25 is the series of combined Type 1+2/Class I+II devices for discharging lightning currents and protecting against voltage surges, in accordance with IEC/EN 61643-11.

Suitable as the first step of protection in incoming power supply panels and areas with exposure to the atmosphere, where installations are usually provided with an external lightning protection system.

Ratings and features

- Lightning impulse current (10/350µs): 25kA per phase
- Maximum discharge current (8/20µs): 100kA per phase
- Nominal discharge current (8/20µs): 25kA per phase
- TNS, TNC and TT networks
- Un(L-N/L-L): 230/400V
- DIN-rail mountable, plug-in format
- Visual and remote end of life indicators
- Reversible chassis to allow cable entry from above or below
- Mechanically coded cartridges to avoid cartridge replacement errors

limp
25kA

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Approvals/Standards

- IEC/EN 61643-11
- CE

IEC CE

GUIDE

Example

STP T12 - 25K 275V - 4PG M

Surge-Trap® Pluggable Type 1+2 / Class I+II combined lightning current arrester (10/350µs) and surge protective device (8/20µs)

Step 1	Lightning impulse current
25K	limp (L-N) =25kA
100K	limp (N-PE) =100kA

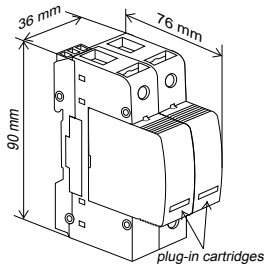
Step 2	Operating voltage
Uc	Un (L-N/L-L)
275V	230/400V
Blank	N-PE protection

Step 3	Network configuration
1P	L-N; 1Ph (TNS, TNC, IT, TT)
2P	2+0; 1Ph+N (TNS,IT)
2PG	1+1; 1Ph+N (TT)
3P	3+0; 3Ph (TNC,IT)
4P	4+0; 3Ph+N (TNS,IT)
4PG	3+1; 3Ph+N (TT)
N	N-PE; Neutral (TT Spark-Gap)

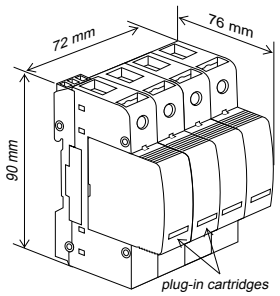
Step 4	Remote monitoring
M	Microswitch included

Dimensions

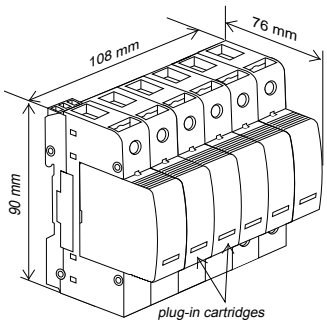
1 pole



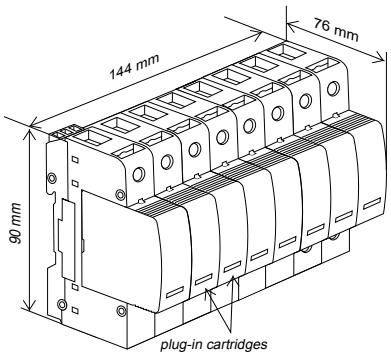
2 poles



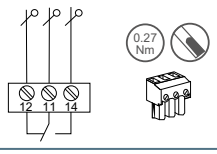
3 poles



4 poles



Microswitch diagram



U_{max} / I_{max}	
AC: 250 V/1 A	max 1.5 mm²
DC: 125 V/0.2 A	

Catalog numbers / Reference numbers

1 pole

		Network									Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Iimp (10/350) [kA]	Imax (8/20) [kA]	In (8/20) [kA]	Up [kV]	REMOTE (M)	L	N
83120152	**STPT12-25K275V-1P**	L-N (1Ph)	A	230	275	25	100	25	≤ 1,5	No	C65	
83120153	**STPT12-25K275V-1PM**	L-N (1Ph)	A	230	275	25	100	25	≤ 1,5	Yes	C65	
83120166	**STPT12-100K-N**	N-PE (N)	B	Neutral	255	100	100	50	≤ 1,5	No		C66

2 poles

		Network									Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Iimp (10/350) [kA]	Imax (8/20) [kA]	In (8/20) [kA]	Up [kV]	REMOTE (M)	L	N
83120156	**STPT12-25K275V-2P**	TNS (1Ph+N)	C	230 / -	275	25	100	25	≤ 1,5	No	C65	
83120154	**STPT12-25K275V-2PG**	TT (1Ph+N)	D	230 / -	275	25	100	25	≤ 1,5	No	C65	C67
83120155	**STPT12-25K275V-2PGM**	TT (1Ph+N)	D	230 / -	275	25	100	25	≤ 1,5	Yes	C65	C67
83120157	**STPT12-25K275V-2PM**	TNS (1Ph+N)	C	230 / -	275	25	100	25	≤ 1,5	Yes	C65	

3 poles

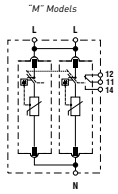
		Network									Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Iimp (10/350) [kA]	Imax (8/20) [kA]	In (8/20) [kA]	Up [kV]	REMOTE (M)	L	N
83120158	**STPT12-25K275V-3P**	TNC (3Ph)	E	- / 400	275	25	100	25	≤ 1,5	No	C65	
83120159	**STPT12-25K275V-3PM**	TNC (3Ph)	E	- / 400	275	25	100	25	≤ 1,5	Yes	C65	

4 poles

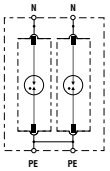
		Network									Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Iimp (10/350) [kA]	Imax (8/20) [kA]	In (8/20) [kA]	Up [kV]	REMOTE (M)	L	N
83120160	**STPT12-25K275V-4P**	TNS (3Ph+N)	F	230 / 400	275	25	100	25	≤ 1,5	No	C65	
83120161	**STPT12-25K275V-4PM**	TNS (3Ph+N)	F	230 / 400	275	25	100	25	≤ 1,5	Yes	C65	
83120150	**STPT12-25K275V-4PG**	TT (3Ph+N)	G	230 / 400	275	25	100	25	≤ 1,5	No	C65	C66
83120151	**STPT12-25K275V-4PGM**	TT (3Ph+N)	G	230 / 400	275	25	100	25	≤ 1,5	Yes	C65	C66

Electrical diagrams

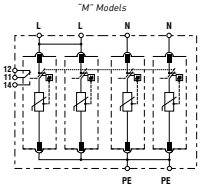
A (1P)



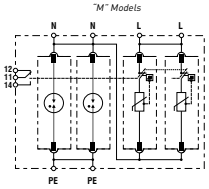
B (N)



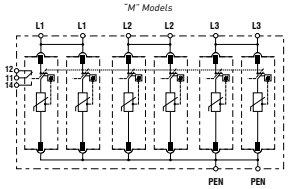
C 2+0 (2P)



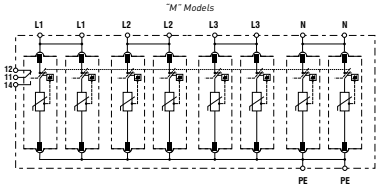
D 1+1 (2PG)



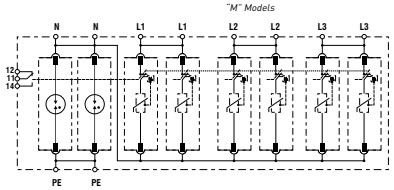
E 3+0 (3P)



F 4+0 (4P)



G 3+1 (4PG)



Replacement cartridges

REFERENCE NUMBER	CATALOG NUMBER	NETWORK	Un [Vac]	Uc [V]	Iimp (10/350) [kA]	Imax (8/20) [kA]	In (8/20) [kA]	Up [kV]	CARTRIDGE ID.
83120007	**SP12-25K275V**	L-N (1Ph)	230	275	25	100	25	≤ 1,5	C65
83120009	**SP12-50K-2PN**	N-PE (N)	Neutral	255	50	100	25	≤ 1,5	C66
83120008	**SP12-100K-N**	N-PE (N)	Neutral	255	100	100	50	≤ 1,5	C67

STP T2 40

STP T2 40 is the series of Type 2/Class II devices for discharging voltage surges, in accordance with IEC/EN 61643-11.

Suitable for the second stage of protection in supply distribution panels in which Type 1 protection devices are installed upstream, or for the first stage of protection in commercial or other applications not exposed to direct strikes and with no external lightning protection system.

Ratings and features

- Maximum discharge current (8/20µs): 40kA per phase
- Nominal discharge current (8/20µs): 20kA per phase
- TNS, TNC, TT and IT networks
- Un(L-N/L-L): 48V, 60V, 120/208V, 230/400V, 277/480V, 400/690V & higher
- DIN-rail mountable, plug-in format
- Visual and remote end of life indicators
- Reversible chassis to allow cable entry from above or below
- Mechanically coded cartridges to avoid cartridge replacement errors

Imax
40kA

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Approvals/Standards

- IEC/EN 61643-11
- CE

GUIDE

Example

STP T2 - 40K 275V - 4PG M

Surge-Trap® Pluggable Type 2 / Class II surge protective device (8/20µs)

Step 1	
Max. discharge current	
40K	Imax (L-N) =40kA
30K	Imax (L-N) =30kA (for 750V only)

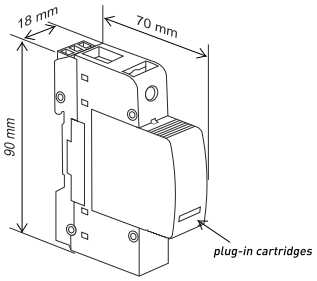
Step 2	
Operating voltage	
Uc	Un (L-N/L-L)
60V	48/-V
75V	60/-V
150V	120/208V
275V	230/400V
320V	277/480V
440V	230/400V "IT"; 400/690V
750V	400/690V; 690/1000V
Blank	N-PE protection

Step 3	
Network configuration	
1P	L-N; 1Ph (TNS,TNC,IT,TT)
N	N-PE; Neutral (TT Spark-Gap)
2P	2+0; 1Ph+N (TNS,IT)
2PG	1+1; 1Ph+N (TT)
3P	3+0; 3Ph (TNC,IT)
4P	4+0; 3Ph+N (TNS,IT)
4PG	3+1; 3Ph+N (TT)

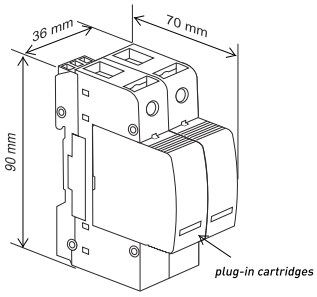
Step 4	
Remote monitoring	
M	Microswitch included

Dimensions

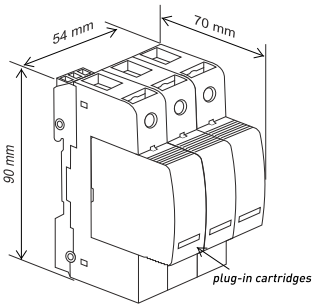
1 pole



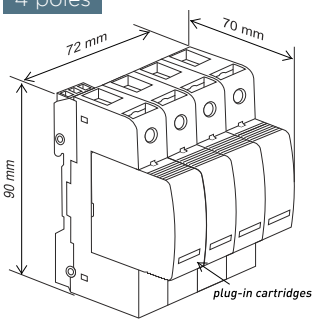
2 poles



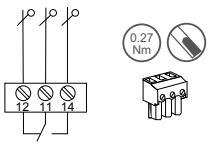
3 poles



4 poles



Microswitch diagram



U_{max} / I_{max}	
AC: 250 V/1 A	max 1.5 mm²
DC: 125 V/0.2 A	

Catalog numbers / Reference numbers

1 pole

		Network								Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [VAC]	Uc [V]	Imax (8/20) [KA]	In (8/20) [KA]	Up@In (8/20) [KV]	REMOTE (M)	L	N
83020104	**STPT2-40K150V-1P**	L-N (1Ph)	A	120	150	40	20	≤0.9		C22	-
83020105	**STPT2-40K150V-1PM**	L-N (1Ph)	A	120	150	40	20	≤0.9	√	C22	-
83020106	**STPT2-40K275V-1P**	L-N (1Ph)	A	230	275	40	20	≤1.3		C23	-
83020107	**STPT2-40K275V-1PM**	L-N (1Ph)	A	230	275	40	20	≤1.3	√	C23	-
83020108	**STPT2-40K320V-1P**	L-N (1Ph)	A	277	320	40	20	≤1.4		C24	-
83020109	**STPT2-40K320V-1PM**	L-N (1Ph)	A	277	320	40	20	≤1.4	√	C24	-
83020110	**STPT2-40K440V-1P**	L-N (1Ph)	A	400	440	40	20	≤2		C25	-
83020111	**STPT2-40K440V-1PM**	L-N (1Ph)	A	400	440	40	20	≤2	√	C25	-
83020100	**STPT2-30K750V-1P**	L-N (1Ph)	A	690	750	30	15	≤3		C26	-
83020101	**STPT2-30K750V-1PM**	L-N (1Ph)	A	690	750	30	15	≤3	√	C26	-
83020112	**STPT2-40K-N**	N-PE (N)	B	Neutral	265	40	20	≤1.5		-	C27

2 poles

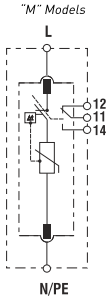
		Network								Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [VAC]	Uc [V]	Imax (8/20) [KA]	In (8/20) [KA]	Up@In (8/20) [KV]	REMOTE (M)	L	N
83020128	**STPT2-40K60V-2P**	TNS (1Ph+N); PV	C	48/-	60; 65 Ucpv	40	20	≤0.7		C20	
83020129	**STPT2-40K60V-2PM**	TNS (1Ph+N); PV	C	48/-	60; 65 Ucpv	40	20	≤0.7	√	C20	
83020130	**STPT2-40K75V-2P**	TNS (1Ph+N); PV	C	60/-	75; 80 Ucpv	40	20	≤0.8		C21	
83020131	**STPT2-40K75V-2PM**	TNS (1Ph+N); PV	C	60/-	75; 80 Ucpv	40	20	≤0.8	√	C21	
83020114	**STPT2-40K150V-2PG**	TT (1Ph+N)	D	120/-	150	40	20	≤0.9 (L-N) ≤1.5 (N-PE)		C22	C27
83020115	**STPT2-40K150V-2PGM**	TT (1Ph+N)	D	120/-	150	40	20	≤0.9 (L-N) ≤1.5 (N-PE)	√	C22	C27
83020116	**STPT2-40K275V-2PG**	TT (1Ph+N)	D	230/-	275	40	20	≤1.3 (L-N) ≤1.5 (N-PE)		C23	C27
83020117	**STPT2-40K275V-2PGM**	TT (1Ph+N)	D	230/-	275	40	20	≤1.3 (L-N) ≤1.5 (N-PE)	√	C23	C27
83020118	**STPT2-40K320V-2PG**	TT (1Ph+N)	D	277/-	320	40	20	≤1.4 (L-N) ≤1.5 (N-PE)		C24	C27
83020119	**STPT2-40K320V-2PGM**	TT (1Ph+N)	D	277/-	320	40	20	≤1.4 (L-N) ≤1.5 (N-PE)	√	C24	C27
83020120	**STPT2-40K150V-2P**	TNS (1Ph+N)	F	120/-	150	40	20	≤0.9		C22	
83020121	**STPT2-40K150V-2PM**	TNS (1Ph+N)	F	120/-	150	40	20	≤0.9	√	C22	
83020122	**STPT2-40K275V-2P**	TNS (1Ph+N)	F	230/-	275	40	20	≤1.3		C23	
83020123	**STPT2-40K275V-2PM**	TNS (1Ph+N)	F	230/-	275	40	20	≤1.3	√	C23	
83020124	**STPT2-40K320V-2P**	TNS (1Ph+N)	F	277/-	320	40	20	≤1.4		C24	
83020125	**STPT2-40K320V-2PM**	TNS (1Ph+N)	F	277/-	320	40	20	≤1.4	√	C24	
83020126	**STPT2-40K440V-2P**	IT (1Ph+N); TNS(1Ph+N)	C	230/-; 400/-	440	40	20	≤2		C25	
83020127	**STPT2-40K440V-2PM**	IT (1Ph+N); TNS(1Ph+N)	C	230/-; 400/-	440	40	20	≤2	√	C25	

ELV

ELV *Extra Low Voltage, also for use in DC Photovoltaic self-consumption / off-grid applications.*

Electrical diagrams

A (1P)



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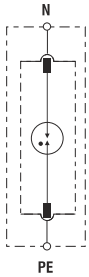
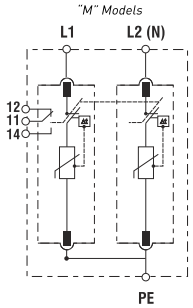


C 2+0 (2P)



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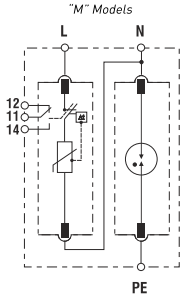
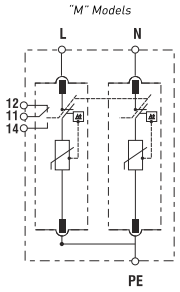


F 2+0 (2P)



SURGE-TRAP® TYPE 2 SPDs | STP T2 40

3 poles

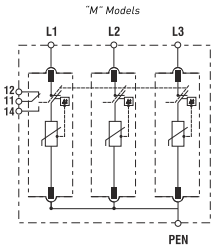
		Network								Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [VAC]	Uc [V]	Imax (8/20) [KA]	In (8/20) [KA]	Up@In (8/20) [KV]	REMOTE (M)	L	N
83020132	**STPT2-40K150V-3P**	TNC (3Ph)	H	-/208	150	40	20	≤0.9		C22	-
83020133	**STPT2-40K150V-3PM**	TNC (3Ph)	H	-/208	150	40	20	≤0.9	√	C22	-
83020134	**STPT2-40K275V-3P**	TNC (3Ph)	H	-/400	275	40	20	≤1.3		C23	-
83020135	**STPT2-40K275V-3PM**	TNC (3Ph)	H	-/400	275	40	20	≤1.3	√	C23	-
83020136	**STPT2-40K320V-3P**	TNC (3Ph)	H	-/480	320	40	20	≤1.4		C24	-
83020137	**STPT2-40K320V-3PM**	TNC (3Ph)	H	-/480	320	40	20	≤1.4	√	C24	-
83020142	**STPT2-40K440V-3P**	IT (3Ph); TNC (3Ph)	I	-/400; -/690	440	40	20	≤2		C25	-
83020143	**STPT2-40K440V-3PM**	IT (3Ph); TNC (3Ph)	I	-/400; -/690	440	40	20	≤2	√	C25	-
83020102	**STPT2-30K750V-3P**	TNC (3Ph)	H	-/690; -/1000	750	30	15	≤3		C26	-
83020103	**STPT2-30K750V-3PM**	TNC (3Ph)	H	-/690; -/1000	750	30	15	≤3	√	C26	-

4 poles

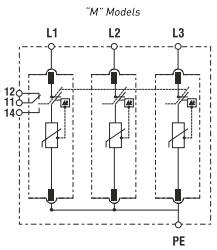
		Network								Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [VAC]	Uc [V]	Imax (8/20) [KA]	In (8/20) [KA]	Up@In (8/20) [KV]	REMOTE (M)	L	N
83020144	**STPT2-40K150V-4PG**	TT (3Ph+N)	J	120/208	150	40	20	≤0.9 (L-N) ≤1.5 (N-PE)		C22	C27
83020145	**STPT2-40K150V-4PGM**	TT (3Ph+N)	J	120/208	150	40	20	≤0.9 (L-N) ≤1.5 (N-PE)	√	C22	C27
83020146	**STPT2-40K275V-4PG**	TT (3Ph+N)	J	230/400	275	40	20	≤1.3 (L-N) ≤1.5 (N-PE)		C23	C27
83020147	**STPT2-40K275V-4PGM**	TT (3Ph+N)	J	230/400	275	40	20	≤1.3 (L-N) ≤1.5 (N-PE)	√	C23	C27
83020148	**STPT2-40K320V-4PG**	TT (3Ph+N)	J	277/480	320	40	20	≤1.4 (L-N) ≤1.5 (N-PE)		C24	C27
83020149	**STPT2-40K320V-4PGM**	TT (3Ph+N)	J	277/480	320	40	20	≤1.4 (L-N) ≤1.5 (N-PE)	√	C24	C27
83020150	**STPT2-40K150V-4P**	TNS (3Ph+N)	L	120/208	150	40	20	≤0.9		C22	
83020151	**STPT2-40K150V-4PM**	TNS (3Ph+N)	L	120/208	150	40	20	≤0.9	√	C22	
83020152	**STPT2-40K275V-4P**	TNS (3Ph+N)	L	230/400	275	40	20	≤1.3		C23	
83020153	**STPT2-40K275V-4PM**	TNS (3Ph+N)	L	230/400	275	40	20	≤1.3	√	C23	
83020154	**STPT2-40K320V-4P**	TNS (3Ph+N)	L	277/480	320	40	20	≤1.4		C24	
83020155	**STPT2-40K320V-4PM**	TNS (3Ph+N)	L	277/480	320	40	20	≤1.4	√	C24	
83020156	**STPT2-40K440V-4P**	IT (3Ph+N); TNS (3Ph+N)	L	230/400; 400/690	440	40	20	≤2		C25	
83020157	**STPT2-40K440V-4PM**	IT (3Ph+N); TNS (3Ph+N)	L	230/400; 400/690	440	40	20	≤2	√	C25	

Electrical diagrams

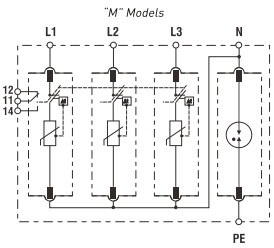
H 3+0 (3P)



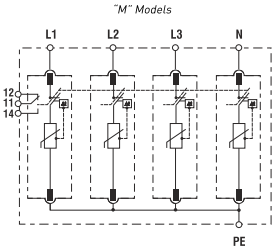
I 3+0 (3P)



J 3+1 (4PG)



L 4+0 (4P)



Replacement cartridges

REFERENCE NUMBER	CATALOG NUMBER	NETWORK	Un [VAC]	Uc [V]	Imax (8/20) [KA]	In (8/20) [KA]	Up@In (8/20) [KV]	CARTRIDGE ID.
83020008	**SP2-40K60V**	L-N (1Ph)	48	60	40	20	≤0.7	C20
83020009	**SP2-40K75V**	L-N (1Ph)	60	75	40	20	≤0.8	C21
83020001	**SP2-40K150V**	L-N (1Ph)	120	150	40	20	≤0.9	C22
83020002	**SP2-40K275V**	L-N (1Ph)	230	275	40	20	≤1.3	C23
83020003	**SP2-40K320V**	L-N (1Ph)	277	320	40	20	≤1.4	C24
83020004	**SP2-40K440V**	L-N (1Ph)	400	440	40	20	≤2	C25
83020007	**SP2-30K750V**	L-N (1Ph)	690	750	30	15	≤3	C26
83020000	**SP2-40K-N**	N-PE (N)	Neutral	265	40	20	≤1.5	C27

STP T2 40 PV

STP T2 40 PV is the series of devices that provide advanced overvoltage protection to photovoltaic systems by utilizing Mersen's optimized dynamic thermal disconnection system, which does not require additional overcurrent protection (back-up fuse) due to its high short-circuit withstand rating.

These surge protective devices are suitable for all PV applications: large-scale, rooftop and self-consumption (off-grid) DC installations.

Ratings and features

- Maximum discharge current (8/20µs): 40kA
- Nominal discharge current (8/20µs): 20kA
- Ucpv: 65, 80, 660, 1060 Vdc and 1500Vdc (soon available)
- Iscpv: 10kA (EN 50539-11), no back-up fuse required
- SCCR: 50kA,100kA (UL 1449 3rd Ed)
- DIN-rail mountable, plug-in format
- Visual and remote end of life indicators
- Reversible chassis to allow cable entry from above or below
- Mechanically coded cartridges to avoid cartridge replacement errors

Imax
40kA

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No back-up fuse required

Approvals/Standards

- EN 50539-11
- UTE C 61740-51
- UL 1449 3rd Ed recognized, File No. E468946

HelioProtection

GUIDE

Example

STP T2 - 40K 1000V - YPV M

Surge-Trap® Pluggable Type 2 / Class II surge protective device (8/20µs)

Step 1	Step 2	Step 3	Step 4
Max. discharge current	Operating voltage	Network configuration	Remote monitoring
40K Imax (L-N) =40kA	Value Ucpv **600V** 660Vdc **1000V** 1060Vdc **1500V** 1500Vdc	**YPV** L+/L-; "Y" configuration (Photovoltaic DC)	**M** Microswitch included

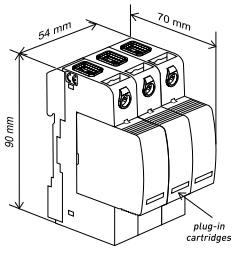
Catalog numbers / Reference numbers

		Network								Cartridge Id.
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	UCPV [VDC]	ISCPV [A]	Imax (8/20) [KA]	In (8/20) [KA]	Up@In (8/20) [KV]	REMOTE (M)	L
83020138	**STPT2-40K600V-YPV**	"Y" PV	A	660	10 000	40	20	≤2.6		C40
83020139	**STPT2-40K600V-YPVM**	"Y" PV	A	660	10 000	40	20	≤2.6	√	C40
83020140	**STPT2-40K1000V-YPV**	"Y" PV	A	1060	10 000	40	20	≤4		C41
83020141	**STPT2-40K1000V-YPVM**	"Y" PV	A	1060	10 000	40	20	≤4	√	C41
83020158	**STPT2-40K1500V-YPV**	"Y" PV	A	1500	10 000	40	15	≤5		C42
83020159	**STPT2-40K1500V-YPVM**	"Y" PV	A	1500	10 000	40	15	≤5	√	C42

Remark: see also page 17 "2 poles" for DC self-comsumption "off-grid" applications ELV *(extra low voltage). Consult us for other voltages*

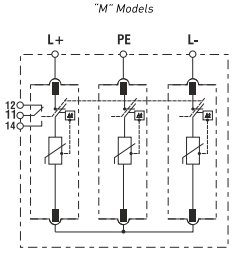
Dimensions

3 modules



Electrical diagram

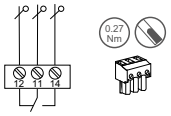
A Y PV



Replacement cartridges

REF. NUMBER	CATALOG NUMBER	NETWORK	UCPV [VDC]	Imax (8/20) [KA]	In (8/20) @UP [KA]	Up@In (8/20) [KV]	CARTRIDGE ID.
83020005	**SP2-40K600V-PV**	PV	330	40	20	≤1.3	C40
83020006	**SP2-40K1000V-PV**	PV	530	40	20	≤2	C41
83020010	**SP2-40K1500V-PV**	PV	750	40	10	≤2,5	C42

Microswitch diagram



U_{max} / I_{max}	
AC: 250 V/1 A	max 1.5 mm²
DC: 125 V/0.2 A	

STP T23 20

STP T23 20 is the series of combined Type 2+3/Class II+III devices for discharging voltage surges while providing a very fine voltage protection level, in accordance with IEC/EN 61643-11.

Suitable as the final stage of protection in panels with Type 2 protection devices installed upstream such as STP T2 40 SPDs. These SPDs should be installed as close as possible to the equipment being protected.

Ratings and features

- Maximum discharge current (8/20µs): 20kA per phase
- Nominal discharge current (8/20µs): 10kA per phase
- Combined voltage pulse Uoc (1.2/50µs): 10kV
- TNS, TNC, TT and IT networks
- Un(L-N/L-L): 120/208V, 230/400V, 277/480V and 400/690V
- PLC friendly solutions (LCF) for Power Line Communications
- DIN-rail mountable, plug-in format
- Visual and remote end of life indicators
- Reversible chassis to allow cable entry from above or below
- Mechanically coded cartridges to avoid cartridge replacement errors

Imax
20kA

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Approvals/Standards

- IEC/EN 61643-11
- CE

GUIDE

Example

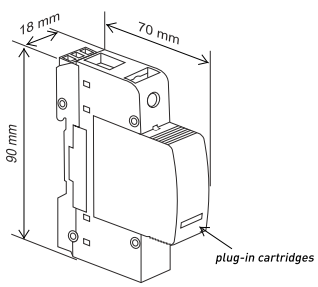
STP T23 - 20K 275V - 4PG LF M

Surge-Trap® Pluggable Type 2+3 / Class II+III surge protective device (8/20µs) and very fine protection of equipment (1.2/50µs)

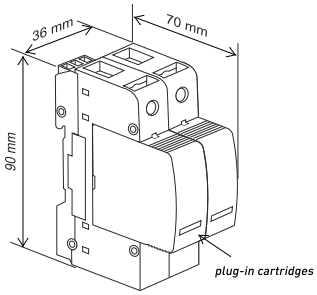
Step 1	Step 2	Step 3	Step 4	Step 5
Max. discharge current	Operating voltage	Network configuration	Additional features	Remote monitoring
20K Imax (L-N) =20kA	**Uc** / **Un (L-N/L-L)** **150V** 120/208V **275V** 230/400V (for LF models only) **320V** 230/400; 277/480V **440V** 230/400V "IT" 400/690V **Blank** N-PE protection	**1P** L-N; 1Ph (TNS,TNC,IT,TT) **N** N-PE; Neutral (TT Spark-Gap) **2P** 2+0; 1Ph+N (TNS) **2PG** 1+1; 1Ph+N (TT) **3P** 3+0; 3Ph (TNC) **4P** 4+0; 3Ph+N (TNS) **4PG** 3+1; 3Ph+N (TT)	**LF** Leakage current free	**M** Microswitch included

Dimensions

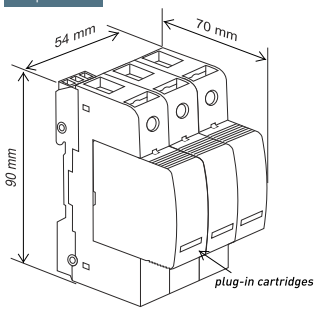
1 pole



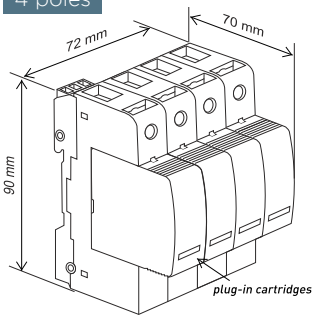
2 poles



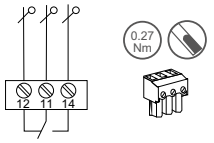
3 poles



4 poles



Microswitch diagram



U_{max} / I_{max}	
AC: 250 V/1 A	max 1.5 mm²
DC: 125 V/0.2 A	

SURGE-TRAP® TYPE 2+3 SPDs | STP T23 20

Catalog numbers / Reference numbers

1 pole

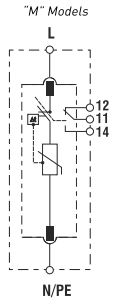
		Network									Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Imax (8/20) [kA]	In (8/20) [kA]	Uoc [kV]	Up@In (8/20) [KV]	REMOTE (M)	L	N
83230100	**STPT23-20K150V-1P**	L-N (1Ph)	A	120	150	20	10	10	≤0.8		C60	-
83230101	**STPT23-20K150V-1PM**	L-N (1Ph)	A	120	150	20	10	10	≤0.8	√	C60	-
83230102	**STPT23-20K320V-1P**	L-N (1Ph)	A	230; 277	320	20	10	10	≤1.4		C62	-
83230103	**STPT23-20K320V-1PM**	L-N (1Ph)	A	230; 277	320	20	10	10	≤1.4	√	C62	-
83230104	**STPT23-20K440V-1P**	L-N (1Ph)	A	400	440	20	10	10	≤2		C63	-
83230105	**STPT23-20K440V-1PM**	L-N (1Ph)	A	400	440	20	10	10	≤2	√	C63	-
83230106	**STPT23-20K-N**	N-PE (N)	B	Neutral	255	20	10	10	≤1.5		-	C64

2 poles

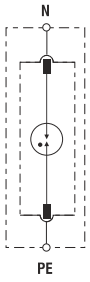
		Network									Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Imax (8/20) [kA]	In (8/20) [kA]	Uoc [kV]	Up@In(8/20) [kV]	REMOTE (M)	L	N
83230108	**STPT23-20K150V-2PG**	TT (1Ph+N)	D	120/-	150	20	10	10	≤0.8 (L-N) ≤1.5 (N-PE)		C60	C64
83230109	**STPT23-20K150V-2PGM**	TT (1Ph+N)	D	120/-	150	20	10	10	≤0.8 (L-N) ≤1.5 (N-PE)	√	C60	C64
83230112	**STPT23-20K320V-2PG**	TT (1Ph+N)	D	230/-; 277/-	320	20	10	10	≤1.4 (L-N) ≤1.5 (N-PE)		C62	C64
83230113	**STPT23-20K320V-2PGM**	TT (1Ph+N)	D	230/-; 277/-	320	20	10	10	≤1.4 (L-N) ≤1.5 (N-PE)	√	C62	C64
83230110	**STPT23-20K275V-2PG-LF**	TT (1Ph+N)	E	230/-	275	20	10	10	≤1.5 (L-N) ≤1.5 (N-PE)		C61	C64
83230111	**STPT23-20K275V-2PG-LFM**	TT (1Ph+N)	E	230/-	275	20	10	10	≤1.5 (L-N) ≤1.5 (N-PE)	√	C61	C64
83230114	**STPT23-20K150V-2P**	TNS (1Ph+N)	F	120/-	150	20	10	10	≤0.8		C60	
83230115	**STPT23-20K150V-2PM**	TNS (1Ph+N)	F	120/-	150	20	10	10	≤0.8	√	C60	
83230116	**STPT23-20K320V-2P**	TNS (1Ph+N)	F	230/-; 277/-	320	20	10	10	≤1.4		C62	
83230117	**STPT23-20K320V-2PM**	TNS (1Ph+N)	F	230/-; 277/-	320	20	10	10	≤1.4	√	C62	
83230134	**STPT23-20K275V-2P-LF**	TNS (1Ph+N)	G	230/-	275	20	10	10	≤1.5		C61	
83230135	**STPT23-20K275V-2P-LFM**	TNS (1Ph+N)	G	230/-	275	20	10	10	≤1.5	√	C61	

Electrical diagrams

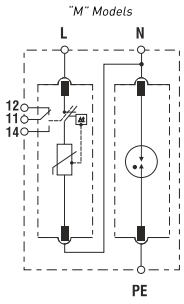
A (1P)



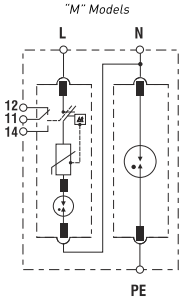
B (N)



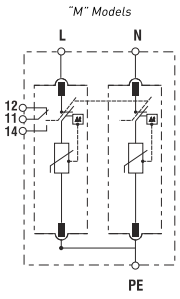
D 1+1 (2PG)



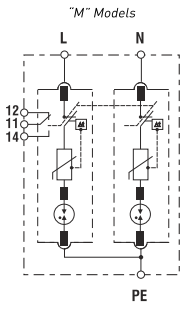
E 1+1 (2PG) LF



F 2+0 (2P)



G 2+0 (2P) LF



SURGE-TRAP® TYPE 2+3 SPDs | STP T23 20

3 poles

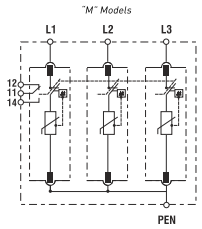
		Network								Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Imax (8/20) [kA]	In (8/20) [kA]	Uoc [kV]	Up@In (8/20) [kV]	REMOTE (M)	L	N
83230118	**STPT23-20K150V-3P**	TNC (3Ph)	H	-/208	150	20	10	10	≤0.8		C60	-
83230119	**STPT23-20K150V-3PM**	TNC (3Ph)	H	-/208	150	20	10	10	≤0.8	√	C60	-
83230122	**STPT23-20K320V-3P**	TNC (3Ph)	H	-/400; -/480	320	20	10	10	≤1.4		C62	-
83230123	**STPT23-20K320V-3PM**	TNC (3Ph)	H	-/400; -/480	320	20	10	10	≤1.4	√	C62	-
83230120	**STPT23-20K275V-3P-LF**	TNC (3Ph)	N	-/400	275	20	10	10	≤1.5		C61	-
83230121	**STPT23-20K275V-3P-LFM**	TNC (3Ph)	N	-/400	275	20	10	10	≤1.5	√	C61	-

4 poles

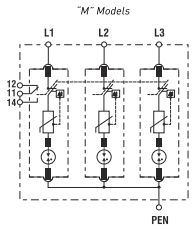
		Network								Cartridge Id.	
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Imax (8/20) [kA]	In (8/20) [kA]	Uoc [kV]	Up@In(8/20) [kV]	REMOTE (M)	L	N
83230124	**STPT23-20K150V-4PG**	TT (3Ph+N)	J	120/208	150	20	10	10	≤0.8 (L-N) ≤1.5 (N-PE)		C60	C64
83230125	**STPT23-20K150V-4PGM**	TT (3Ph+N)	J	120/208	150	20	10	10	≤0.8 (L-N) ≤1.5 (N-PE)	√	C60	C64
83230128	**STPT23-20K320V-4PG**	TT (3Ph+N)	J	230/400; 277/480	320	20	10	10	≤1.4 (L-N) ≤1.5 (N-PE)		C62	C64
83230129	**STPT23-20K320V-4PGM**	TT (3Ph+N)	J	230/400; 277/480	320	20	10	10	≤1.4 (L-N) ≤1.5 (N-PE)	√	C62	C64
83230126	**STPT23-20K275V-4PG-LF**	TT (3Ph+N)	K	230/400	275	20	10	10	≤1.5 (L-N) ≤1.5 (N-PE)		C61	C64
83230127	**STPT23-20K275V-4PG-LFM**	TT (3Ph+N)	K	230/400	275	20	10	10	≤1.5 (L-N) ≤1.5 (N-PE)	√	C61	C64
83230130	**STPT23-20K150V-4P**	TNS (3Ph+N)	L	120/208	150	20	10	10	≤0.8		C60	
83230131	**STPT23-20K150V-4PM**	TNS (3Ph+N)	L	120/208	150	20	10	10	≤0.8	√	C60	
83230132	**STPT23-20K320V-4P**	TNS (3Ph+N)	L	230/400; 277/480	320	20	10	10	≤1.4		C62	
83230133	**STPT23-20K320V-4PM**	TNS (3Ph+N)	L	230/400; 277/480	320	20	10	10	≤1.4	√	C62	
83230136	**STPT23-20K275V-4P-LF**	TNS (3Ph+N)	M	230/400	275	20	10	10	≤1.5		C61	
83230137	**STPT23-20K275V-4P-LFM**	TNS (3Ph+N)	M	230/400	275	20	10	10	≤1.5	√	C61	

Electrical diagrams

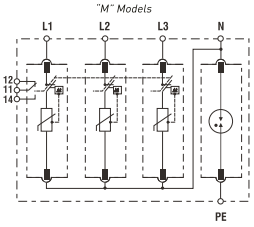
H 3+0 (3P)



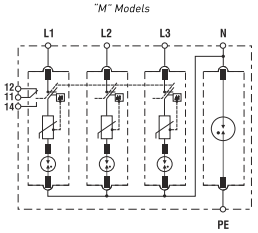
N 3+0 (3P) LF



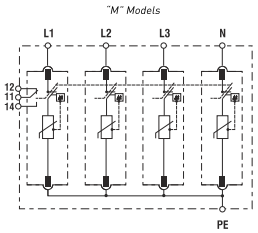
J 3+1 (4PG)



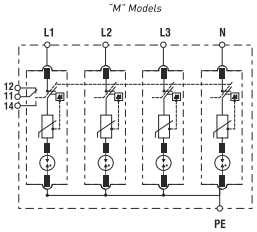
K 3+1 (4PG) LF



L 4+0 (4P)



M 4+0 (4P) LF



Replacement cartridges

REFERENCE NUMBER	CATALOG NUMBER	NETWORK	Un [Vac]	Uc [V]	Imax (8/20) [kA]	In (8/20) [kA]	Uoc [kV]	Up@In (8/20) [kV]	CARTRIDGE ID.
83230001	**SP23-20K150V**	L-N (1Ph)	120	150	20	10	10	≤0.8	C60
83230003	**SP23-20K275V-LF**	L-N (1Ph)	230	275	20	10	10	≤1.5	C61
83230002	**SP23-20K320V**	L-N (1Ph)	230; 277	320	20	10	10	≤1.4	C62
83230004	**SP23-20K440V**	L-N (1Ph)	400	440	20	10	10	≤2	C63
83230000	**SP23-20K-N**	N-PE (N)	Neutral	255	20	10	10	≤1.5	C64

STM T23 20 S

STM T23 20 S is the series of combined Type 2+3/Class II+III devices for discharging voltage surges while providing a very fine voltage protection level, in accordance with IEC/EN 61643-11.

Suitable as the final stage of protection in panels with Type 2 protection devices installed upstream. These SPDs should be installed as close as possible to the equipment being protected. Ideal for limited spaces. Wide range of voltage ratings.

Ratings and features

- Maximum discharge current (8/20µs): 20kA, 6kA
- Nominal discharge current (8/20µs): 10kA, 3kA
- Combined voltage pulse (1.2/50µs): 10kV, 6kV
- Single phase TT and TNS networks
- Un: 12V, 24V, 48V, 60V, 120V, 230V
- Typically for use also in the corresponding DC voltages
- DIN-rail mountable, monobloc format
- Visual (LED) and remote end of life indicators
- Power status (LED) indicator
- Space saving "slim" format

Imax
20kA

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Approvals/Standards

- IEC/EN 61643-11
- CE

IEC CE

GUIDE

Example

STM T23 - 20K 275V - SP - S M

Surge-Trap®
Type 2+3 / Class II+III
surge protective device (8/20µs) and very fine protection of equipment (1.2/50µs)

Step 1	Step 2	Step 3	Step 4	Step 5
Max. discharge current	Operating voltage	Network configuration	Additional features	Remote monitoring
6K Imax (L-N) =6kA 20K Imax (L-N) =20kA	Uc / Un (L-N) 20V 12V 30V 24V 60V 48V 75V 60V 150V 120V 230V 230V	SP Single Phase; 1Ph+N (TT,TNS)	S Slim - space saving	M Microswitch included

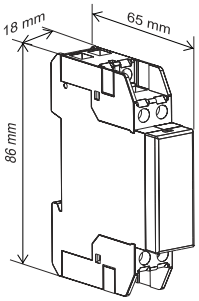
Catalog numbers / Reference numbers

2 poles

			Network							
REF. NUMBER	CATALOG NUMBER WITHOUT REMOTE MONIT.	CATALOG NUMBER WITH REMOTE MONIT.	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Imax (8/20) [kA]	In (8/20) [kA]	Uoc [kV]	Up@In (8/20) [kV]
83230500 83230501	STMT23-6K20V-SP-S	STMT23-6K20V-SP-SM	TT/TNS (1Ph+N)	A	12	20	6	3	6	≤0.22 (L1-L2) 0.7 (L1/L2-PE)
83230504 83230505	STMT23-6K30V-SP-S	STMT23-6K30V-SP-SM	TT/TNS (1Ph+N)	A	24	30	6	3	6	≤0.22 (L1-L2) 0.7 (L1/L2-PE)
83230506 83230507	STMT23-6K60V-SP-S	STMT23-6K60V-SP-SM	TT/TNS (1Ph+N)	A	48	60	6	3	6	≤0.33 (L1-L2) 0.7 (L1/L2-PE)
83230508 83230509	STMT23-6K75V-SP-S	STMT23-6K75V-SP-SM	TT/TNS (1Ph+N)	A	60	75	6	3	6	≤0.5 (L1-L2) 0.9 (L1/L2-PE)
83230502 83230503	STMT23-6K150V-SP-S	STMT23-6K150V-SP-SM	TT/TNS (1Ph+N)	A	120	150	6	3	6	≤0.7 (L1-L2) 0.9 (L1/L2-PE)
83230510 83230511	STMT23-20K275V-SP-S	STMT23-20K275V-SP-SM	TT/TNS (1Ph+N)	A	230	275	20	10	10	≤1.4 (L1-L2) 1.4 (L1/L2-PE)

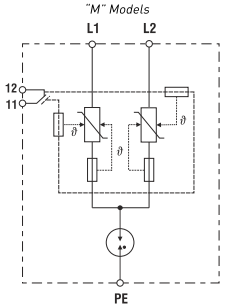
Dimensions

2 poles



Electrical diagram

A



Microswitch diagram

	U_{max} / I_{max}
AC:	250 V/1 A
DC:	125 V/0.2 A

STE T23 20

STE T23 20 is the series of combined Type 2+3/Class II+III devices for discharging voltage surges while providing a very fine voltage protection level, in accordance with IEC/EN 61643-11.
Complete with a built-in powerful EMI filter.

Suitable as the final stage of protection in installations with electromagnetic disturbances which might interrupt, degrade or limit system performance.

Series connection for applications up to 20A rated current.

Ratings and features

- Maximum discharge current (8/20µs): 20kA
- Nominal discharge current (8/20µs): 10kA
- Combined voltage pulse (1.2/50µs): 6kV
- Filter attenuation up to 82dB (common mode)
- Rated current load (IL): 20A
- Single phase TT and TNS networks
- Un: 120V, 230V
- DIN-rail mountable, monobloc format
- Visual (LED) and remote end of life indicators
- Power status (LED) indicator

Imax
20kA

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Approvals/Standards

- IEC/EN 61643-11
- CE

GUIDE

Example
STE T23 - 20K 275V - SP M

Surge-Trap®
Type 2+3 / Class II+III
surge protective device (8/20µs) and very fine protection of equipment (1.2/50µs).
With EMI filter

Step 1	Step 2	Step 3	Step 4
Max. discharge current	Operating voltage	Network configuration	Remote monitoring
20K Imax (L-N) =20kA	Uc / Un (L-N): 150V 120V; 275V 230V	SP Single Phase; 1Ph+N (TT,TNS)	M Microswitch included

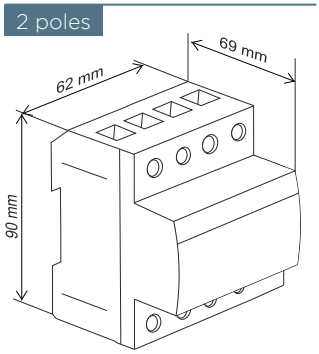
Catalog numbers / Reference numbers

2 poles

		Network									
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Imax (8/20) [kA]	In (8/20) [kA]	Uoc [kV]	Up@In [kV]	IL [A]	REMOTE (M)
83230401	**STET23-20K150V-SPM**	TT/TNS (1Ph+N)	A	120	150	20	10	6	≤0.8	20	√
83230403	**STET23-20K275V-SPM**	TT/TNS (1Ph+N)	A	230	275	20	10	6	≤1.2	20	√

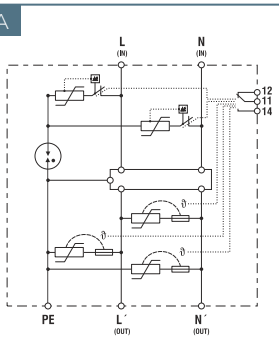
Dimensions

2 poles

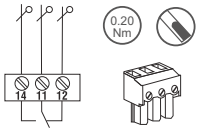


Electrical diagram

A



Microswitch diagram



	U_{max} / I_{max}
AC:	250 V/1 A
DC:	125 V/0.2 A

max 1.5 mm²

STL T23 10

STL T23 10 is the series of robust 10kV combined Type 2+3/Class II+III devices for discharging voltage surges while providing a very fine voltage protection level, in accordance with IEC/EN 61643-11. Suitable for protection of LED outdoor luminaires (street-light). Due to the exposure of the extremely sensitive LED electronics to lightning-induced overvoltages, STL T23 10 is a widespread market solution amongst OEM manufacturers of LED lighting systems.

Ratings and features

- Combined voltage pulse (1.2/50µs): 10kV (Uoc)
- Maximum discharge current (8/20µs): 10kA
- Nominal discharge current (8/20µs): 5kA
- Class 1 and Class 2 luminaires, universal solutions
- Miniature size and easy to install
- Hardwired, in-line format
- End of life indication
- Rated current load (IL): 10A (series)
- Optional: "surge tested and certified" luminary with STL T23 10 by accredited LAB

Uoc
10kV

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Approvals/Standards

- IEC/EN 61643-11
- CE
- CB scheme

GUIDE

Example

STL T23 - 10K 320V - C12

Surge-Trap®
Type 2+3 / Class II+III
surge protective device (8/20µs) and very fine protection of equipment (1.2/50µs). For lighting LED luminaire

Step 1	
Combined voltage pulse	
10K	Uoc: 10kV

Step 2	
Operating voltage	
Uc	Un (L-N)
320V	230V

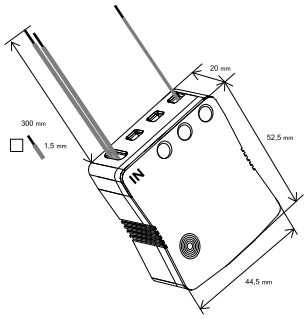
Step 3	
Electrical diagram	
C12	Class 1 and 2
C2	Class 2

Catalog numbers / Reference numbers

		Network								
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Imax (8/20) [kA]	In (8/20) [kA]	Uoc [kV]	Up@In (8/20) [kV]	IL [A]
83230302	**STLT23-10K320V-C12**	C12 (1Ph+N)	B	230	320	10	5	10	≤1.5 (L1-L2) ≤1.8 (L1/L2-GND)	10
83230301	**STLT23-10K320V-C2**	C2 (1Ph+N)	C	230	320	10	5	10	≤1.5 (L1-L2)	10

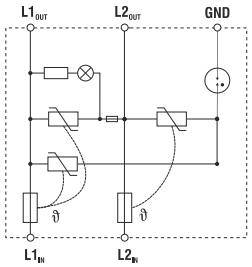
Dimensions

ALL

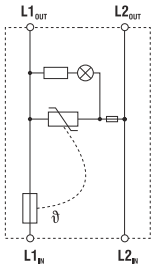


Electrical diagrams

B C12



C C2



STLB T23 10

STLB T23 10 is the new series of robust 10kV combined Type 2+3/Class II+III devices, in accordance with IEC/EN 61643-11, now with new wiring configurations, multiple fixing options and IP66 options. Suitable for protection of LED outdoor luminaires (street-light). Due to the exposure of the extremely sensitive LED electronics to lightning-induced overvoltages, STLB T23 10 is a widespread market solution amongst OEM manufacturers of LED lighting systems.

Ratings and features

- Combined voltage pulse (1.2/50µs): 10kV (Uoc)
- Maximum discharge current (8/20µs): 10kA
- Nominal discharge current (8/20µs): 5kA
- Class 1 and Class 2 luminaires, universal solutions
- Miniature size and easy to install
- Multiple wiring options
- End of life indication
- Rated current load (IL): 2,5A (series)
- Optional: "surge tested and certified" luminary with STLB T23 10 by accredited LAB

Uoc
10kV

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Approvals/Standards

- IEC/EN 61643-11
- CE
- CB scheme

GUIDE

Example

STLB 23 - 10K 320V - C3 - WW - IP

Surge-Trap®
Type 2+3 / Class II+III
surge protective device (8/20µs) and very fine protection of equipment (1.2/50µs). For lighting LED luminaire

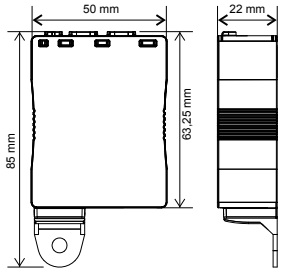
Step 1	Step 2	Step 3	Step 4	Step 5
Combined voltage pulse	Operating voltage	Electrical diagram	Wiring/connectors	Ingress protection
10K Uoc: 10kV	Uc Un (L-N) 320V 230V	C3 Universal C4 L-N (only)	DD screw terminal-screw terminal WD wire-screw terminal WW wire-wire	IP IP66 - IP20

Catalog numbers / Reference numbers

REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Imax (8/20) [kA]	In (8/20) @Up [kA]	Uoc [kV]	Up [kV]	IL [A]	IP
83230306	STLBT23-10K320V-C3-DD	C3 (1Ph+N)	A	230	320	10	5	10	≤ 1.8 (L-N) ≤ 1.8 (L/N-GND)	2,5	IP20
83230307	STLBT23-10K320V-C3-WD	C3 (1Ph+N)	A	230	320	10	5	10		2,5	IP20
83230305	STLBT23-10K320V-C3-WW	C3 (1Ph+N)	A	230	320	10	5	10		2,5	IP20
83230304	STLBT23-10K320V-C3-WW-IP	C3 (1Ph+N)	A	230	320	10	5	10		2,5	IP66
83230313	STLBT23-10K320V-C4-DD	C4 (1Ph+N)	B	230	320	10	5	10	≤ 1.5 (L-N) ≤ 1.8 (N-GND)	2,5	IP20
83230314	STLBT23-10K320V-C4-WD	C4 (1Ph+N)	B	230	320	10	5	10		2,5	IP20
83230312	STLBT23-10K320V-C4-WW	C4 (1Ph+N)	B	230	320	10	5	10		2,5	IP20
83230311	STLBT23-10K320V-C4-WW-IP	C4 (1Ph+N)	B	230	320	10	5	10		2,5	IP66

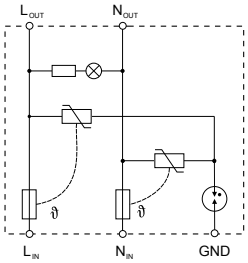
Dimensions

ALL

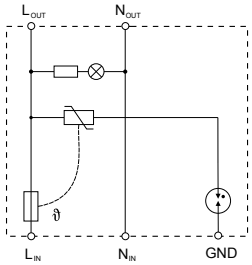


Electrical diagrams

A C3



B C4



SURGE-TRAP® TYPE 2+3 SPDs

STM T23 10 SF is the series of robust 10kV combined Type 2+3/ Class II+III devices for discharging voltage surges while providing a very fine voltage protection level, in accordance with IEC/EN 61643-11. Suitable for protection of LED outdoor luminaires (street-light). Due to the exposure of the extremely sensitive LED electronics to lightning–induced overvoltages, **STM T23 10 SF** has been designed to be installed in the pole/fusebox.

Ratings and features

- Combined voltage pulse (1.2/50Qs): 10kV (Uoc)
- Maximum discharge current (8/20Qs): 10kA
- Nominal discharge current (8/20Qs): 5kA
- Class 1 and Class 2 luminaires, universal solutions
- Miniature size and easy to install
- End of life indication
- Rated current load (IL): 2,5A (series)
- For DIN-rail fuseboxes (in the pole of the luminaire)

Uoc
10kV

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Approvals/Standards

- IEC/EN 61643-11
- CE

GUIDE

Example

STM T23 - 10K 320V - SP - S F

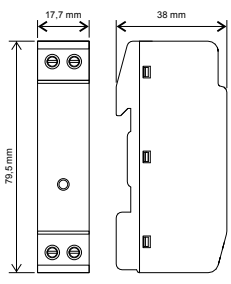
Surge-Trap®
Type 2+3 / Class II+III
surge protective device (8/20µs) and very fine protection of equipment (1.2/50µs). For lighting LED luminaire.
DIN rail mountable.

Step 1	Step 2	Step 3	Step 4	Step 5
Max. discharge current	Operating voltage	Network configuration	Additional features	Additional features
10K Imax (L-N)=10kA	Uc Un (L-N) 320V 230V	SP Single-Phase; 1Ph-N (TT, TNS)	S Slim space saving	F Fusebox mountable

Catalog numbers / Reference numbers

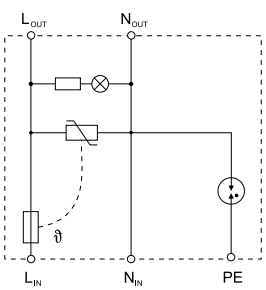
REFERENCE NUMBER	CATALOG NUMBER	SYSTEM TYPE	ELECTRICAL DIAGRAM	Un [Vac]	Uc [V]	Imax (8/20) [kA]	In (8/20) @Up [kA]	Uoc [kV]	Up [kV]	IL [A]
83230512	**STMT23-10K320V-SP-SF**	C4 (1Ph+N)	A	230	320	10	5	10	≤ 1.5 (L-N) ≤ 1.8 (N-PE)	2,5

Dimensions



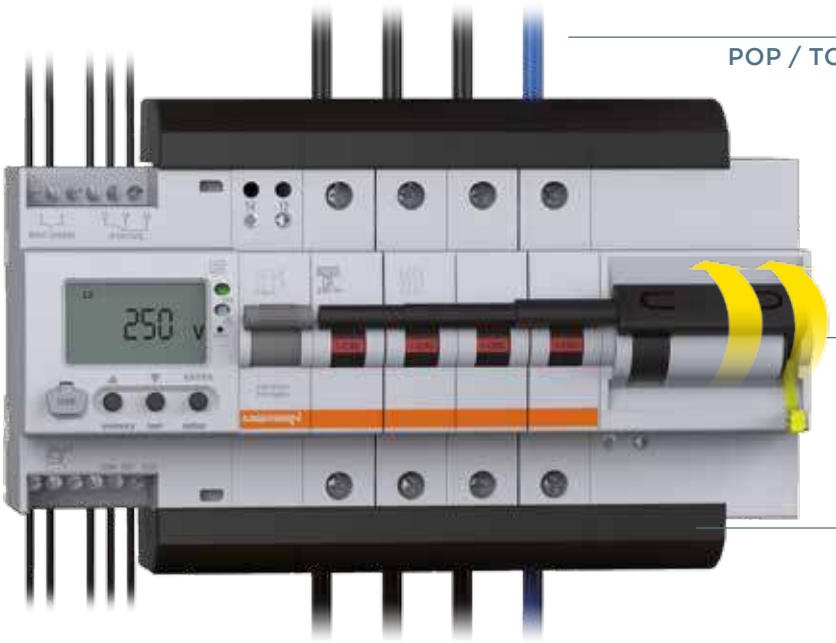
Electrical diagrams

A C4



SMART SOLUTIONS FOR PROTECTION OF REMOTE SITES

SMART AUTOMATIC RECLOSER



Full protection

POP / TOV temporary overvoltage and undervoltage
Phase sequence fault
RCD earth leakage
MCB overcurrent

Event logging

Automatic reclosing

Compact pre-wired, plug & play

POP / TOV
temporary overvoltage
EN 50550

Phase sequence
fault

RCD
earth leakage

MCB
overcurrent

These are programmable, motorized devices, comprising a monitoring unit and a circuit breaker (autorecloser) that disconnect the supply when the values of voltage, current or earth leakage exceed predefined thresholds. **These devices are automatically reclosed** when the values return to within the allowable limits.

- The pre-wired **plug and play** autorecloser, compact and installable on DIN rail, allows for **quick and easy connection.**
- The smart autorecloser provides **maximum continuity of service** and is ideal for 24x7 installations with remote locations.
- **Memory with an error log,** as well as remote operation (remote reset function) and remote indication.
- 6 to 63 A circuit breakers, single phase (P+N) and 3-phase (4P), for 120V and 230V. Consult us for other configurations.

CONTINUOUS GROUND MONITOR

An SPD is only as efficient as the ground connection

24x7 checking of the earth-loop

Easy, NO extra earth rods required

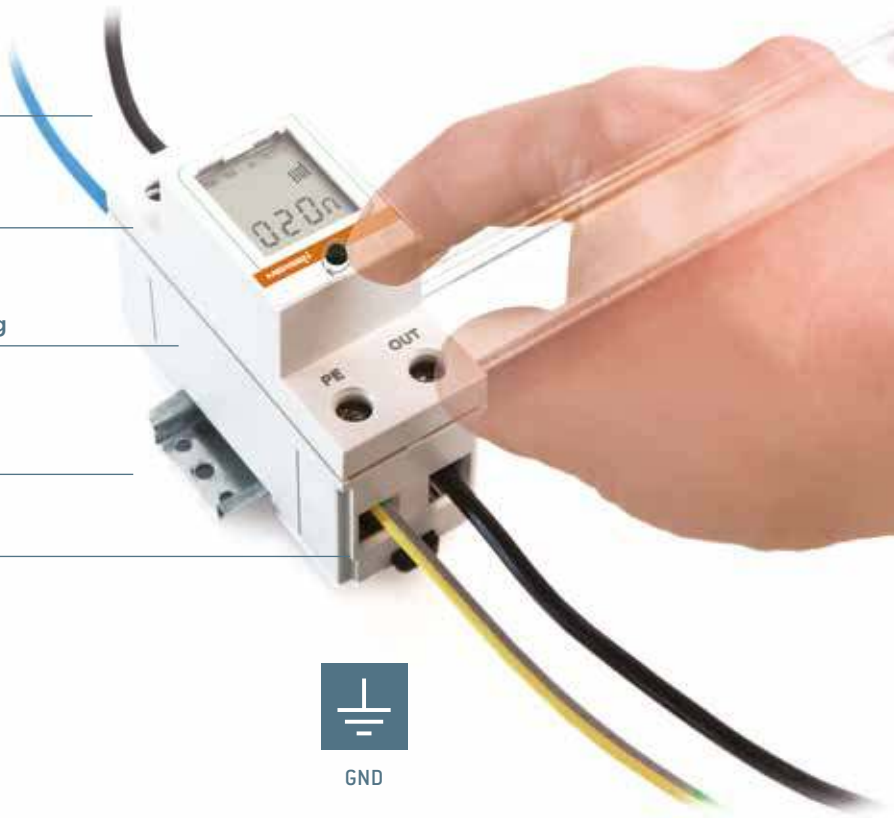
Complementary with maintenance earth testing

Know your grounding status in real-time

100% security

Detecting

Aging of earth rods
Cable theft
Soil resistance (dry seasons)
Breakage / bad connection



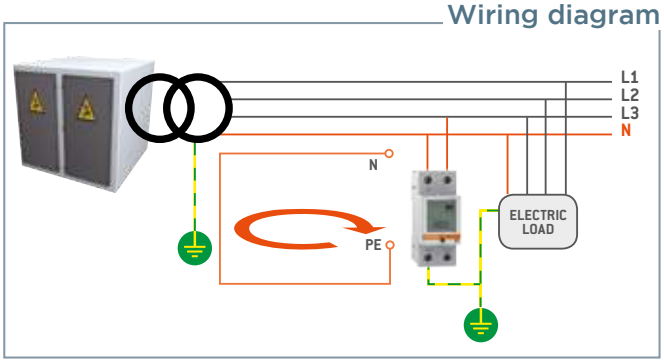
This device continuously monitors the state of the ground connection:

- Ensures **proper operation of surge protection devices,** discharging energy through the facility ground.
- Ensures the **protection of personnel against indirect contacts.**
- Reduces cost of preventative maintenance.

By the method of calculating the loop resistance, it checks the impedance of the actual path of an indirect contact leakage, for **detecting the following possible incidents,** both within the installation and in the transformation centre to which it is connected:

- **Deterioration of the ground connection** due to aging of the earth rods, theft of the cables or increasing soil resistivity in dry seasons.
- **Breakage or bad connection of the neutral wire.**

Wiring diagram



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